



California Regional Water Quality Control Board, San Diego Region

**ORDER NO. R9-2012-0063
NPDES NO. CAG999003**

GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR THE DISCHARGE OF LANTHANUM-MODIFIED CLAY TO SURFACE WATERS OF THE UNITED STATES IN THE SAN DIEGO REGION

The following Dischargers, may apply for coverage under this General Permit in compliance with the waste discharge requirements as set forth in this General Permit:

Table 1. Discharger Information

Discharger	Any person or entity that discharges lanthanum-modified clay to canals, ditches, lakes, ponds, reservoirs or other storage or constructed conveyance facilities that are surface waters of the United States (U.S.) for the purpose of inactivating soluble reactive phosphorus.
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Discharges of lanthanum-modified clay by persons identified in Table 1 above are subject to waste discharge requirements as set forth in this Order. Administrative information is contained in Table 2 below.

Table 2. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	December 12, 2012
This Order shall become effective on:	January 1, 2013
This Order shall expire on:	January 1, 2018
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as follows:	Minor

I, David W. Gibson, Executive Officer, do hereby certify that this General Permit with all attachments is a full, true, and correct copy of the General Permit adopted by the California Regional Water Quality Control Board, San Diego Region, on **December 12th, 2012**.

TENTATIVE
David Gibson, Executive Officer

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I. DISCHARGE INFORMATION

This General Permit (also referred to herein as Order) regulates the discharge of lanthanum-modified clay to receiving surface waters of the United States (US) consisting of canals, ditches, lakes, ponds, reservoirs or other storage or constructed conveyance facilities within the jurisdiction of the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board). The San Diego Region covers a large portion of San Diego County, portions of South Orange County, and the southwestern portion of Riverside County based on hydrologic drainage areas.

Lanthanum-modified clay may be applied to surface waters to bind excess free phosphorus in the water column. This application of lanthanum-modified clay may pose a threat to existing and potential beneficial uses of waters of the US if not properly controlled and regulated. The Clean Water Act (CWA), at section 301(a), broadly prohibits the discharge of any pollutant to waters of the US, except in compliance with an NPDES permit. Lanthanum-modified clay discharged into surface waters constitute pollutants within the meaning of the CWA even if the discharge is for the purpose of restoring water quality. Therefore, coverage under an NPDES permit is required.

II. PERMIT COVERAGE AND APPLICATION REQUIREMENTS

A. Discharger Eligibility Criteria

Any person who proposes to discharge lanthanum-modified clay to surface waters in the San Diego Region may submit a Notice of Intent (NOI) for coverage under this Order. Attachment H, which is a part of this General Permit, lists products containing lanthanum-modified clay. The NOI may address multiple applications of lanthanum-modified clay to multiple waterbodies throughout the San Diego Region. When the application of lanthanum-modified clay is to a waterbody owned or managed by one person/ party but the application is conducted by another person/party, it is both persons/parties duty to jointly submit the NOI and obtain coverage under this Order. Both persons/parties are jointly considered the "Discharger".

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. General Permit Application

To obtain coverage under this Order, Dischargers must submit a complete application containing the following items to the San Diego Water Board:

1. A completed Notice of Intent (NOI) form shown as Attachment B, signed in accordance with the signatory requirements of the Standard Provisions in Attachment D, Section V.B.1. Signatory and Certification Requirements, no later than 60 days prior to the proposed application of lanthanum-modified clay. The NOI may address multiple applications by the Discharger of lanthanum-modified clay at

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different surface waterbodies throughout the San Diego Region;

2. Payment of the annual application fee, equal to the first annual fee, made payable to State Water Resources Control Board or "SWRCB;" and
3. A Water Quality Management Plan (WQMP) as specified by Section V.A of this Order for each waterbody; and
4. A Technical Report that identifies the sources for the elevated phosphorus in the waterbody and the measures being implemented to control these sources and that demonstrates other source control measures, by themselves, would be insufficient to address problems in the waterbody caused by excessive phosphorus concentrations.

The NOI, including, the application fee, and other attachments must be submitted to the following address:

CRWQCB – San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123

C. Notice of Enrollment

Upon receipt of the NOI, the San Diego Water Board will post the WQMP to its website for a 30-day public comment period. Following review of the WQMP and public comments, the San Diego Water Board will issue to the Discharger, a Notice of Enrollment (NOE) under this Order. The NOE will include the discharge application rate, any additions or changes to monitoring requirements specified in Attachment E that are due to special circumstances, and any other reporting requirements. General permit coverage will be effective when all of the following have occurred:

1. The Discharger has submitted a complete permit application;
2. The Water Quality Management Plan has been accepted by the San Diego Water Board; and
3. The San Diego Water Board has issued a Notice of Enrollment (NOE).

The San Diego Water Board or the Director of the USEPA may require any person requesting enrollment under this Order or subject to waste discharge requirements under this Order to apply for and obtain an individual NPDES permit. Cases where an individual NPDES permit may be required include but are not limited to those described in 40 CFR 122.28 (b) (3).

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D. Fees

Under this General Permit, lanthanum-modified clay discharges require no treatment systems to meet the terms and conditions of this Order and pose no significant threat to water quality. As such, they are eligible for Category 3 in section 2200(b)(8) of Title 23, California Code of Regulations (CCR). This category is appropriate because lanthanum-modified clay discharges incorporate best management practices (BMPs) to control potential impacts to beneficial uses, and this General Permit prohibits residual pollutant waste from causing excursions of water quality objectives. The annual fee associated with this rating can be found in section 2200(b)(8) of Title 23, CCR, which is available at <http://www.waterboards.ca.gov/resources/fees/>.

E. Terminating Coverage

To terminate permit coverage, a Discharger must submit a complete and accurate Notice of Termination (NOT). The Discharger's coverage under this General Permit terminates on the day that the San Diego Water Board approves the NOT. Prior to the termination effective date, the Discharger is subject to the terms and conditions of this General Permit and is responsible for submitting the annual fee and all reports associated with this General Permit. Approval of the NOT does not relieve the Discharger from enforcement of violations that occurred prior to the termination date. Discharger must submit an NOT when one of the following conditions occurs:

1. A new owner or operator has taken over responsibility of the Discharger's application of lanthanum-modified clay covered under an existing NOE;
2. The Discharger has ceased all discharges from the application of lanthanum-modified clay for which it obtained General Permit coverage and does not expect to discharge during the remainder of this General Permit term; or
3. The Discharger has obtained coverage under an individual permit for all discharges required to be covered by an NPDES permit.

F. Notifications

1. This General Permit serves as a general NPDES Permit for the discharge of lanthanum-modified clay to surface waters to bind phosphorus to improve water quality by limiting nutrient availability to algae and aquatic weeds.
2. Dischargers who submit a complete Notice of Intent under this General Permit are not required to submit an individual permit application. The San Diego Water Board may request additional information or determine that a Discharger is not eligible for coverage under this General Permit and would be better regulated under an individual permit or other general NPDES permit. If the discharge becomes covered by an individual or another general permit, the applicability of this General Permit to the specified discharge will be immediately terminated on the effective date of the individual permit or coverage under the other general permit.

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3. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements (WDR), shall create a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights.

III. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board), finds:

- A. Legal Authorities.** This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from application equipment to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).
- B. Background and Rationale for Requirements.** The San Diego Water Board developed the requirements in this Order based on information described in the Fact Sheet. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E are also incorporated into this Order.
- C. Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections VII.A and VII.C of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.
- D. Notification of Interested Parties.** The San Diego Water 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 and recommendations. Details of notification are provided in the Fact Sheet of this Order.
- E. Consideration of Public Comment.** The San Diego Water Board, in a public meeting on December 12, 2012, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

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THEREFORE, IT IS HEREBY ORDERED that in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

IV. DISCHARGE PROHIBITIONS

- A.** The discharge of lanthanum-modified clay to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in section 13050 of the California Water Code is prohibited.
- B.** The discharge of lanthanum-modified clay at a location or in a manner different from that described in this General Permit is prohibited.
- C.** The discharge of lanthanum-modified clay shall not cause, have a reasonable potential to cause, or contribute to exceedances of any applicable standard or criterion promulgated by USEPA pursuant to section 303 of the CWA, or water quality objectives adopted by the State or San Diego Water Board.
- D.** Compliance with Discharge Prohibitions contained in the Water Quality Control Plan for the San Diego Basin (Basin Plan, referenced in Attachment G) is required as a condition of this Order.

V. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations

Dischargers must prepare and implement a Water Quality Management Plan (WQMP) to prevent or reduce the discharge of pollutants from the application of lanthanum-modified clay in compliance with the provisions of this Order. A separate WQMP must be prepared for each waterbody that will be treated with lanthanum-modified clay. The WQMP, which shall include the proposed monitoring plan for assessing compliance with this Order as prescribed in Attachment E, must describe, at a minimum the following:

1. The waterbody to which lanthanum-modified clay will be applied, including but not limited to surface area, volume, beneficial uses, impairments, historic monitoring, inflowing streams, outflowing streams, upstream and downstream ecology, unique features, etc.
2. The time period for application of lanthanum-modified clay with particular attention paid to seasonal storm variations, seasonal water chemistry fluctuations, seasonal water volume fluctuations, and recreational uses.

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3. The application rate for lanthanum-modified clay to the waterbody, which must be demonstrated to be no more than what is stoichiometrically necessary to bind the free phosphorus in the waterbody. Any proposal to add additional lanthanum-modified clay than necessary must be explicitly approved by the San Diego Water Board in the Notice of Enrollment or an amended Notice of Enrollment.
4. The best management practices (BMPs) that will be implemented to prevent the lanthanum-modified clay from discharging to downstream waterbodies. These BMPs may include and are not limited to silt curtains, berms, temporary diversions, following product label instructions, etc.
5. The “good housekeeping” measures that will be implemented to prevent spills, leaks, and unintended discharges of lanthanum-modified clay during transport, staging, and storage.
6. The personnel training in the proper application of lanthanum-modified clay.
7. The measures to take in the event of an exceedance of receiving water limitations caused by the application of lanthanum-modified clay. Such measures include but are not limited to ceasing the discharge, notifying the San Diego Regional Board, and remedying the exceedance. The enrollee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order and the Notice of Enrollment from the San Diego Water Board, including such accelerated or additional monitoring as may be necessary to determine the nature, and effect of the non-complying discharge.
8. The source control measures to prevent the future inputs of phosphorus to the treated waterbody.
9. Any other measures necessary to ensure that the discharge complies with this Order.

Major changes to the WQMP shall be submitted to the San Diego Water Board for approval. Examples of major changes include using a different product other than what is specified in the WQMP, changing an application method that may result in different amounts of lanthanum-modified clay being applied, or adding or deleting significant BMPs.

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

D. Water Quality Management Log

The Discharger shall maintain a log for each lanthanum-modified clay application. This log shall contain, at a minimum, the following information:

1. Date of application;

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2. Location of application;
3. Name of applicator;
4. Application details, such as flow and level of water body, time application started and stopped, lanthanum-modified clay application rate and concentration;
5. Visual monitoring assessment; and
6. Certification that applicator(s) implemented the WQMP.

VI. RECEIVING WATER LIMITATIONS

A. Surface Water Limitation

The discharge shall at all times be in conformance with applicable water quality standards and shall not cause an excursion above any applicable narrative or numeric water quality objective, including but not limited to all applicable provisions contained in:

1. The San Diego Water Board's *Water Quality Control Plan for the San Diego Basin* (Basin Plan), including beneficial uses, water quality objectives, and implementation plans; including but not limited to the following:
 - a) **Biostimulatory Substances** – Inland surface waters, bays and estuaries and coastal lagoon waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total phosphorus (P) concentrations shall not exceed 0.05 mg/L in any stream at the point where it enters any standing body of water, nor 0.025 mg/L in any standing body of water. A desired goal in order to prevent plant nuisance in streams and other flowing waters appears to be 0.1mg/L total P. These values are not to be exceeded more than 10% of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1, on a weight to weight basis shall be used.
 - b) **Color** – Water shall be free of coloration that causes nuisance or adversely affects beneficial uses. The natural color of fish, shellfish or other resources in inland surface waters, coastal lagoon or bay and estuary shall not be impaired. Inland surface waters shall not contain color in concentrations in excess of the numerical objectives described in [the Basin Plan's] Table 3-2.
 - c) **Floating Material** – Waters shall not contain floating material, including solids, liquids, foams and scum in concentrations which cause nuisance or adversely affect beneficial uses.

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- d) **Hydrogen Ion Concentration (pH)** – Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR), or estuarine (EST), or saline (SAL) beneficial uses. Changes in normal ambient pH levels shall not exceed 0.5 units in fresh waters with designated cold freshwater habitat (COLD) or warm freshwater habitat (WARM) beneficial uses. In bays and estuaries the pH shall not be depressed below 7.0 nor raised above 9.0. In inland surface waters the pH shall not be depressed below 6.5 nor raised above 8.5.
- e) **Sediment** – The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
- f) **Suspended and Settleable Solids** – Waters shall not contain suspended and settleable solids in concentrations of solids that cause nuisance or adversely affect beneficial uses.
- g) **Taste and Odors** – Waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish or other Regional water resources used for human consumption shall not be impaired in inland surface waters and bays and estuaries. Inland surface waters shall not contain odors in concentrations in excess of the numerical objectives described in [the Basin Plan's] Table 3-2.
- h) **Temperature** – The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of any COLD water be increased more than 5° F above the natural receiving water temperature.
- i) **Turbidity** – Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. This receiving water limitation has historically been interpreted as downstream turbidity does not exceed upstream turbidity.

Inland surface waters shall not contain turbidity in excess of the numerical objectives described in [the Basin Plan's] Table 3-2. Turbidity values in Table 3-2 or background levels shall not be exceeded more than 10% of the time over any one year period.

The transparency of waters in lagoons and estuaries shall not be less than 50% of the depth at locations where measurement is made by means of a standard secchi disk, except where lesser transparency is caused by rainfall runoff from undisturbed natural areas and dredging projects conducted in conformance with waste discharge requirements of the Regional Board. With these two exceptions, increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

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Natural Turbidity

Maximum Increase

0-50 NTU	20% over natural turbidity level
50-100 NTU	10 NTU
Greater than 100 NTU	10% over natural turbidity level

In addition, within San Diego Bay, the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less than 8 feet in more than 20 percent of the readings in any zone, as measured by a standard Secchi disk. Wherever the water is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone.

B. Groundwater Limitations – Not Applicable

VII. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.
2. The Discharger shall comply with the following San Diego Water Board provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:
 - a) The Discharger shall comply with all requirements and conditions of this Order. Any permit non-compliance constitutes a violation of the Clean Water Act (CWA) or the California Water Code (CWC) and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of an application for permit renewal, modification, or reissuance.
 - b) This Order expires on **Jan. 1, 2018**, after which, the terms and conditions of this Order are automatically continued pending issuance of a new WDR, provided that all requirements of USEPA's NPDES regulations at 40 CFR 122.6 and the State's regulations at CCR Title 23, Section 2235.4 regarding the continuation of expired Orders and waste discharge requirements are met.
 - c) A copy of this Order shall be made available to all personnel/staff (including field staff) involved with the compliance of this Order.
 - d) For the purposes of this Order, the term permit, general permit, and WDR, shall have the same meaning as the term Order used elsewhere in this Order.

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B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions:

This Order or the Notice of Enrollment from the San Diego Water Board may be modified, revoked and reissued, or terminated for reasons including, but not limited to, the following:

- a) Violation of any terms or conditions of this Order or the Notice of Enrollment from the San Diego Water Board;
- b) Obtaining enrollment under this Order, or a Notice of Enrollment from the San Diego Water board, by misrepresentation or failure to disclose fully all relevant facts;
- c) A change in any condition that requires either a temporary or permanent reduction or elimination of the discharge subject to waste discharge requirements;
- d) Promulgation of new or amended regulations by the State Water Board, San Diego Water Board or USEPA, including revisions to the Basin Plan;
- e) Receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with the provisions of 40 CFR 122, 123, 124, and 125;
- f) The San Diego Water Board determines that continued discharges may cause unreasonable degradation of the aquatic environment.
- g) Additional phosphorus mitigation active ingredients. This General Permit may be re-opened to add additional or new active ingredients for phosphorus mitigation.

The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order or an associated discharge Notice of Enrollment from the San Diego Water Board, or a notification of planned change in or anticipated noncompliance with this Order or discharge Notice of Enrollment does not stay any condition of this Order or the Notice of Enrollment from the San Diego Water Board.

2. Special Studies, Technical Reports and Additional Monitoring Requirements – Not Applicable

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3. **Construction, Operation and Maintenance Specifications – Not Applicable**
4. **Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable**
5. **Other Special Provisions – Not Applicable**
6. **Compliance Schedules – Not Applicable**

VIII. COMPLIANCE DETERMINATION

Compliance with the receiving water limitations prescribed in Section VI. of this Order will be determined by assessment of the results of the monitoring conducted in accordance with Attachment E, which is designed to answer the following key questions:

1. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of receiving water limitations?
2. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of the “not toxics in toxic amount” narrative toxicity objective?

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ATTACHMENT A – DEFINITIONS

Application Area

Is the area of the treated waterbody to which lanthanum-modified clay is directly applied.

Arithmetic Mean (μ)

Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Best Management Practices (BMPs)

Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bioaccumulative

Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)

CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge

Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

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For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Degrade (degradation)

Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)

DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Discharge

The application of Phoslock lanthanum-modified clay to surface waters of the State and United States.

Discharger

A Discharger under this General Permit includes any entity involved in the application of Phoslock lanthanum-modified clay as a phosphorus mitigation material, that results in a discharge to waters of the US, and meets either or both of the following two criteria:

1. The entity has control over the financing for or the decision to perform phosphorus mitigation that result in discharges, including the ability to modify those decisions; or
2. The entity has day-to-day control of phosphorus mitigation material applications or performs activities that are necessary to ensure compliance with this General Permit. For example, the entity is authorized to direct workers to carry out activities required by this General Permit or perform such activities themselves.

Enclosed Bays

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration

The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

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Estuaries

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters

All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Median

The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)

ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)

Sample results which are less than the laboratory's MDL.

Phosphorus Management

Phoslock lanthanum-modified clay is applied to surface waterbodies to inactivate soluble phosphorus in the water column and/or soluble phosphorus that may be released from bottom sediments, to improve water quality. Following application, the Lanthanum-bound phosphorus results in the formation of a highly stable and insoluble mineral (lanthanum phosphate, LaPO_4) that is unavailable to aquatic organisms. Phosphorus inactivation in surface waters is typically used to reduce the impacts of eutrophication and improve water quality by reducing the internal loading of excessive phosphorus.

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Ocean Waters

The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollution Prevention

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or San Diego Water Board.

Reporting Level (RL)

RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the San Diego Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) in a San Diego Water Board Basin Plan.

Standard Deviation (σ)

Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

μ is the arithmetic mean of the observed values; and

n is the number of samples.

Toxicity Reduction Evaluation (TRE)

TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity

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control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

Waters of the United States (Waters of the U.S.)

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters, including interstate "wetlands;"
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;
 - b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - c. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the U.S. under this definition;
5. Tributaries of waters identified in paragraphs (a) through (d) of this definition;
6. The territorial sea; and
7. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the U.S. [See Note 1 of this section.] Waters of the U.S. do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wildlife Habitat

Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

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ATTACHMENT B – NOTICE OF INTENT

**ORDER NO. R9-2012-0063
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**GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
 PERMIT FOR THE DISCHARGE OF LANTHANUM-MODIFIED CLAY TO SURFACE
 WATERS OF THE UNITED STATES IN THE SAN DIEGO REGION**

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item	A. <input type="checkbox"/> New Applicator	B. <input type="checkbox"/> Change of Information: WDID# _____
	C. <input type="checkbox"/> Change of responsibility: WDID# _____	

II. DISCHARGER INFORMATION

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. Contact Person	H. Email address	I. Title	J. Phone

III. BILLING ADDRESS (Enter Information only if different from Section II above)

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. Email address	H. Title	I. Phone	

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IV. TREATED WATERBODY INFORMATION

A. Lanthanum-modified clay discharged to (check all that apply):

1. Canals, ditches, lakes, ponds, reservoirs or other storage or constructed conveyance facilities owned and controlled by Discharger.
Name of the waterbody(ies): _____

2. Name(s) of adjacent creeks, streams, drainages, etc. that may receive water from the treated waterbody: _____

Attach map of proposed treatment area(s) and all adjacent creeks, streams and drainages, etc.

V. APPLICATION INFORMATION

A. Proposed Period of Application: Start Date _____
End Date _____

B. Has a Water Quality Management Plan (WQMP) been prepared and is included with this NOI as a part of the permit submittal? ? Yes No

If not, when will it be prepared? _____

(Note.) A permit cannot be issued without a RWQCB-reviewed and approved WQMP.

C. Number of surface acres treated: _____

VI. NOTIFICATION

Have potentially affected public and governmental agencies been notified? Yes No

VII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
 YES NO NA

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VIII. CERTIFICATION

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

A. Printed Name: _____

B. Signature: _____ Date: _____

C. Title: _____

X. FOR RWQCB USE ONLY

WDID:	Date NOI Received:	Date NOI Processed:
Case Handler's Initial:	Fee Amount Received: \$	Check #:

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INSTRUCTIONS FOR COMPLETING NOI

ORDER NO. R9-2012-0063
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GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR THE DISCHARGE OF LANTHANUM-MODIFIED CLAY TO SURFACE WATERS OF THE UNITED STATES IN THE SAN DIEGO REGION

These instructions are intended to help you, the Discharger, to complete the Notice of Intent (NOI) form for this General NPDES permit. **Please type or print clearly when completing the NOI form.** For any field, if more space is needed, submit a supplemental letter with the NOI.

Send the completed and signed form along with the filing fee and supporting documentation to the San Diego RWQCB.

Section I – Notice of Intent Status

Indicate whether this request is for the first time coverage under this General Permit or a change of information for the discharge already covered under this General Permit. For a change of information or responsibility, please supply the eleven-digit Waste Discharge Identification (WDID) number for the discharge.

Section II – Discharger Information

Enter the name of the Discharger.
Enter the street number and street name where correspondence should be sent (P.O. Box is acceptable).
Enter the city that applies to the mailing address given.
Enter the county that applies to the mailing address given.
Enter the state that applies to the mailing address given.
Enter the zip code that applies to the mailing address given.
Enter the name (first and last) of the contact person.
Enter the email address of the contact person.
Enter the contact person's title.
Enter the daytime telephone number of the contact person

Section III – Billing Address

Enter the information **only** if it is different from Section II above.

- Enter the name (first and last) of the person who will be responsible for the billing.
- Enter the street number and street name where the billing should be sent (P.O. Box is acceptable).
- Enter the city that applies to the billing address.
- Enter the county that applies to the billing address.

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- e. Enter the state that applies to the billing address.
- f. Enter the zip code that applies to the billing address.
- g. Enter the email address of the person responsible for billing.
- h. Enter the title of the person responsible for billing.
- i. Enter the daytime telephone number of the person responsible for billing.

Section IV – Receiving Water Information

Please be reminded that this General Permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 et. seq.) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 et. seq.). This General Permit requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Additional information on federally-listed threatened or endangered species and federally-designated critical habitat is available from NMFS (www.nmfs.noaa.gov) for anadromous or marine species or FWS (www.fws.gov) for terrestrial or freshwater species.

- A.** Check all boxes that apply.
1. Check this box if the treatment area is a canal, ditch, lake, pond, reservoir or other storage or constructed conveyance facility. Print the name of the water body or waterbodies.
 2. Print the name(s) of adjacent creeks, streams, drainages, etc. that may receive water from the treated waterbody.

Section V – Application Information

- A.** List the time frame of the proposed application.
- B.** Identify whether or not a Water Quality Management Plan (WQMP) has been prepared and is included with the NOI in the permit submittal.
- C.** Identify the number of surface acres treated on the waterbody.

The Discharger must submit a new NOI if any information stated in this section will be changed. If the Discharger plans to use phosphorus mitigation material other than products specified in Attachment H., this permit does not cover the discharge. An application for modification of the permit is necessary per section VII.C.1.g.

Section VI – Notification

Have you notified potentially affected governmental agencies, as required under item VIII.B of the General Permit?

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Section VII – Fee

The amount of Annual fee shall be based on Category 3 discharge specified in section 2200(b)(9) of Title 23, California Code of Regulations. Fee information can be found at http://www.waterboards.ca.gov/resources/fees/docs/fy1112fee_schdl_npdes_prmt.pdf.

Check the YES box if you have included payment of the annual fee. Check the NO box if you have not included this payment. **NOTE:** You will be billed annually and payment is required to continue coverage.

Section VIII – Certification

- A. Print the name of the appropriate official. The person who signs the NOI must meet the signatory and certification requirements stated in Attachment D Standard Provisions item V.B.
- B. The person whose name is printed above must sign and date the NOI.
- C. Enter the title of the person signing the NOI.

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IV. CERTIFICATION

"I certify under penalty of law that 1) I am not required to be permitted under this General Permit No.CAG999003, and 2) this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I understand that the submittal of this Notice of Termination does not release the discharger from liability for any violations of the Clean Water Act".

A. Printed Name: _____

B. Signature: _____ **Date:** _____

C. Title: _____

V. FOR SAN DIEGO WATER BOARD USE ONLY

Approved for Termination

Denied and Returned to the Discharger

A. Printed Name: _____

B. Signature: _____

C. Date: _____

NOT Effective Date: / /

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ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

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2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the San Diego Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Water Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions
 - a) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)
 - b) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

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3. Prohibition of bypass. Bypass is prohibited, and the San Diego Water Board may take enforcement action against a Discharger for bypass, unless:
(40 C.F.R. § 122.41(m)(4)(i))
 - a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
 - b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance;
(40 C.F.R. § 122.41(m)(4)(i)(B)) and
 - c) The Discharger submitted notice to the San Diego Water Board as required under Standard Provisions – Permit Compliance I.G.5 below.
(40 C.F.R. § 122.41(m)(4)(i)(C).)
4. The San Diego Water Board may approve an anticipated bypass, after considering its adverse effects, if the San Diego Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above.
(40 C.F.R. § 122.41(m)(4)(ii).)
5. Notice
 - a) Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)
 - b) Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

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caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
 - a) An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b) The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - c) The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
 - d) The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)
3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the San Diego Water Board. The San Diego Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

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III. STANDARD PROVISIONS – MONITORING

- A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

- A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the San Diego Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- B. **Records of monitoring information shall include:**
 - 1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
 - 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 - 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 - 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 - 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 - 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- C. **Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):**
 - 1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
 - 2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2)).

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V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the San Diego Water Board, State Water Board, or USEPA within a reasonable time, any information which the San Diego Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the San Diego Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Water Code, §13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the San Diego Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k))
2. For a corporation, all permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1))
3. For a partnership or sole proprietorship, all permit applications shall be signed by a general partner or the proprietor, respectively. (40 C.F.R. § 122.22(a)(2))
4. For a municipality, State, federal, or other public agency, all permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. § 122.22(a)(3)).
5. All reports required by this Order and other information requested by the San Diego Water Board, State Water Board, or USEPA shall be signed by a person described

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in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- a) The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
 - b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
 - c) The written authorization is submitted to the San Diego Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3))
6. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the San Diego Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c))
7. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d))

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Water Quality Management Plan (WQMP) as described in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.22(l)(4))
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the San Diego Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i))

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3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the San Diego Water Board. (40 C.F.R. § 122.41(l)(4)(ii))
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii))

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i))
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
 - a) Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A))
 - b) Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B))
3. The San Diego Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii))

F. Planned Changes

The Discharger shall give notice to the San Diego Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

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1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b); (40 C.F.R. § 122.41(l)(1)(i)) or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. § 122.41(l)(1)(ii))

The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii))

G. Anticipated Noncompliance

The Discharger shall give advance notice to the San Diego Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(l)(2))

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7))

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the San Diego Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8))

VI. STANDARD PROVISIONS – ENFORCEMENT

The San Diego Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the San Diego Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

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1. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(2)):
 - a) 500 micrograms per liter ($\mu\text{g/L}$) (40 C.F.R. § 122.42(a)(2)(i));
 - b) 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
 - c) Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
 - d) The level established by the San Diego Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv))

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (San Diego Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations. The San Diego Water Board may modify, delete, or add monitoring requirements through the Notice of Enrollment. As part of its WQMP, the Discharger may propose alternative or reduced monitoring for a specific project. The proposal must include justification and reasoning for the change, must demonstrate that it is adequate to answer the two key questions raised in General Monitoring Requirement VIII.A, and it is subject to San Diego Water Board approval.

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. Another waste stream, body of water, or substance shall not dilute the monitored discharge. All samples shall be taken at the anticipated monitoring locations specified in the Discharger's WQMP
- B.** All laboratory analyses shall be conducted at a laboratory certified for such analyses (by the California Department of Public Health) in accordance with California Water Code section 13176. Laboratories that perform sample analyses shall be identified in all monitoring reports. The Discharger shall institute a Quality Assurance-Quality Control Program for any onsite field measurements such as electric conductivity, pH, turbidity, and temperature. The Quality Assurance-Quality Control Program must be specified in the Discharger's WQMP and must conform to USEPA guidelines or to procedures approved by the State Board or the San Diego Water Board.
- C.** Water monitoring must be conducted according to USEPA test procedures approved under 40 CFR Section 136, "Guidelines Establishing Test procedures for the Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures are specified in this Order or by the San Diego Water Board.
- D.** Records of monitoring information shall include the following:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The individuals who performed the sampling or measurements;
 - 3. The dates analysis were performed;
 - 4. The individuals who performed the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. Results of analyses.

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- E. All monitoring instruments and devices used to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their accuracy.
- F. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this MRP.

II. MONITORING LOCATIONS AND PHASES

A. Monitoring Locations

Each Discharger shall establish a sufficient number of monitoring locations to obtain samples that represent: (a) the quality of surface water prior to application; (b) the quality of surface water within the treatment area; and (c) the quality of surface water outside the treatment area that potentially could be affected by the application.

As part of the WQMP, the Discharger must propose the specific monitoring locations and demonstrate that the proposed locations are sufficient to assess compliance with the receiving water limitations, discharge specifications, and other requirements in this General Permit. Monitoring location information shall include a description of the treatment area, GPS coordinates, and total proposed amount and rate of lanthanum modified clay being applied. The specific monitoring locations initially identified in the WQMP may be changed upon approval by the San Diego Water Board.

B. Sample Phases

1. **Pre-Application Monitoring.** Background monitoring samples shall be collected prior to the time of the application event, at the specified monitoring locations no sooner than 24 hours before the application area.
2. **Event Monitoring.** Event monitoring samples shall be collected during application and immediately after sufficient time has elapsed such that treated water will have exited the treatment area.
 - a. **Static Water** (such as ponds, lakes, reservoirs and slow moving or quiescent bodies of water) Samples must be collected within the treatment area. A minimum of one sample location per 10 surface acres (or fraction thereof) is required.
 - b. **Flowing water** (such as canals, streams, creeks and ditches) Samples must be collected within the treatment area and outside the treatment area after sufficient time has elapsed such that treated water will have exited the treatment area. A minimum of one sample location per 10 acres of treatment area (or fraction thereof) and one location immediately downstream of the treated waterbody.
3. **Post-Event Monitoring.** Post-event monitoring samples shall be collected within the application area in static water and within and outside the treatment area in flowing water within one week after application.

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

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- IV. EFFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE**
- V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS – NOT APPLICABLE**
- VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE**
- VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE**
- VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER**

A. General Monitoring Requirements

The monitoring program described in the WQMP shall be designed to answer these two key questions.

1. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of receiving water limitations?
2. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of the “not toxics in toxic amount” narrative toxicity objective?

The monitoring program in the WQMP shall describe the tasks and time schedules in which these two key questions will be addressed.

The monitoring program described in the WQMP must consider watershed specific attributes and waste constituents, based on the characteristics of waterbodies upstream and downstream of the application area, as well as the receiving water quality conditions. Developing the details of a monitoring design requires clearly defining several inputs to the design and then organizing these in a logical framework that supports effective decision making about indicators, monitoring locations, and monitoring frequency. The logical framework should describe:

1. The basic geographic and hydrographic features of the area, particularly application points and the pathways(s) of residue flows;
2. Lanthanum-modified clay application practices and how they are distributed in space and time;
3. Relevant knowledge about the transport, fates, and effects of lanthanum-modified clay, including best and worst case scenarios;
4. Description of the designated beneficial uses in each water body;
5. Relevant knowledge about the action of cumulative and indirect effects;
6. Mechanisms through which lanthanum-modified clay applications could lead to designated use impacts, given the basic features of the area;
7. Known and potential impacts of lanthanum-modified clay applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration;

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8. Sufficient number of sampling areas to assess the entire area of influence from the application; and
9. A description of sampling methods and a sampling schedule.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by the treatment area. Attention shall be given to the presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

B. Visual, Physical, and Chemical Monitoring Requirements

Prior to and following the application, samples of the sediment and water column at designated monitoring stations, times and frequencies as specified in the WQMP must be collected and analyzed for the constituents in Table E-1. No less than one sediment and one surface water sample must be collected for every 10 surface acres (or fraction thereof) being treated. Any proposed changes or alternatives to these requirements must be justified with logical reasoning and approved by the San Diego Water Board.

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Table E-1 Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation
Physical	1. Temperature ¹	°F	Grab ³
	2. pH ²	Number	
	3. Turbidity ²	NTU	
Chemical	1. Free Lanthanum - water	µg/L	Grab ³
	2. Total Lanthanum – sediment ⁴	µg/kg	
	3. Dissolved Oxygen ¹	mg/L	
	4. Alkalinity	mg/L CaCO ₃	
	5. Total Suspended Solids	mg/L	
	6. Free Reactive Phosphorus - water	mg/L	
	7. Total Phosphorus - water	mg/L	
	8. Total Phosphorus – sediment	mg/kg	
¹ Field testing. ² Field or laboratory testing. ³ Water samples shall be collected at the surface of the water body. ⁴ A minimum of 2 samples is required to address anticipated inherent variability.			

IX. OTHER MONITORING REQUIREMENTS

The following monitoring requirements may apply to the application of lanthanum-modified clay within the San Diego Region. The San Diego Regional Board may require similar monitoring through the Notice of Enrollment letter.

A. Biological Monitoring

1. Benthic Monitoring. The Discharger may conduct pre- and post-treatment benthic monitoring upstream and downstream of the treatment area as described in Table E-2. Specific details on location, frequency and timing are proposed as follows:

Table E-2. Benthic Monitoring at MS-BIO-UP and MS-BIO-DOWN

Parameter	Units	Sample Type	Minimum Sampling Frequency
Benthic Macroinvertebrates	IBI	--	pre- and post-treatment

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Benthic macroinvertebrates analysis may be conducted prior to commencement of the Phoslock application and within 30 days of the termination of the application, using the SWAMP bioassessment protocol for Collecting Benthic Macroinvertebrates Samples and Associated Physical and Chemical Data for Ambient Bioassessment in California (Ode 2007, available at: <http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures>). Data shall be reported in the SWAMP format and uploaded into the California Environmental Data Exchange Network (CEDEN). In addition, the bioassessment data shall be reported using the Southern California Index of Biotic Integrity (IBI) (Ode et al. 2005), as well as each of the individual metrics.

The sampling locations may be upstream and downstream of the treatment area, preferably at the same location as any chemical sample location. Benthic Monitoring downstream of the treatment area after termination of the lanthanum-modified clay application is not required if no discharge from the treated waterbody occurs during or within 30 days after the completion of the application.

2. Periphyton Monitoring. The Discharger may be required to monitor for periphyton upstream, and downstream of the application area (MS-BIO-UP, MS-BIO-Down, MS-2) as follows:

Table E-3. Periphyton Monitoring at LN-BIO-UP and LN-BIO-DOWN

Parameter	Units	Sample Type	Minimum Sampling Frequency
Periphyton	IBI	--	one time

Periphyton analysis may be conducted prior to commencement of the lanthanum-modified clay application and within 30 days of the termination of the application and shall be done using the SWAMP bioassessment protocol for Collecting Stream Algae Samples and Associated Physical and Chemical Data for Ambient Bioassessment in California (Fetscher, Busse, and Ode 2010, available at: <http://swamp.mpsl.mlml.calstate.edu/resources-and-downloads/standard-operating-procedures>).

Samples for algal taxonomy, algal cover, and algal biomass (Ash-free-dry-mass, and chlorophyll) may be taken. Data shall be reported in the SWAMP format, and uploaded into the California Environmental Data Exchange Network (CEDEN). In addition, the algae community data shall be reported using individual algae metrics.

The sampling locations may be upstream and downstream of the lake before and after treatment, preferably at the same location as the chemical sample location. Periphyton Monitoring after termination of the lanthanum-modified clay application is not required if no overflow from the treated waterbody to downstream waters occurs during or within 30 days after the application

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B. Other Potential Monitoring

Through the Notice of Enrollment, the San Diego Water Board may require monitoring for chlorophyll a and algae ID with cell count at the monitoring locations for the pre-event, event, and post-event monitoring as specified in the discharger’s WQMP.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping and the requirements of the WQMP.

B. Self-Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or San Diego Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board’s California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit **post event** SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. The post event SMR must also summarize and discuss trends from all monitoring conducted during previous applications of lanthanum-modified clay to that specific waterbody.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-4. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On	Monitoring Period	SMR Due Date
Background (pre-event), Event and Post Event, as noted above.	Notice of Enrollment Authorization Date	Background (pre-event) through Post-Event as specified in the WQMP	45 days following the end of the Monitoring Period

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4. An annual status report that shall be sent to the San Diego Water Board must include:
 - a) All PMP monitoring results for the previous year including trend analysis;
 - b) A list of potential sources of the reportable priority pollutant(s);
 - c) A summary of all actions undertaken pursuant to the control strategy; and
 - d) A description of actions to be taken in the following year.
5. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
 - d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.
6. The Discharger shall submit SMRs in accordance with the following requirements:
 - a) The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS.

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When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

- b) The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
- c) SMRs must be submitted to the San Diego Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
9174 Sky Park Court
San Diego, CA 92123-4340

C. Discharge Monitoring Reports (DMRs) – Not Applicable

D. Other Reporting Requirements - None

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ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section III of this Order, the San Diego Water Board incorporates this Fact Sheet as findings of the San Diego Water Board supporting the issuance of the Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of the Order.

The Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of the Order that are specifically identified as “not applicable” have been determined not to apply to the Discharger. Sections or subsections of the Order not specifically identified as “not applicable” are fully applicable to the Discharger.

BACKGROUND INFORMATION¹

By letter dated February 6, 2012, the County of Orange submitted a Report of Waste Discharge (ROWD) for the application of Phoslock within Laguna Niguel Lake. The ROWD included: Form 200, Application/Report of Waste Discharge, General Information Form for Waste Discharge Requirements or NPDES Permit; a Notice of Exemption with supporting documentation for the project from OC Planning; a January 10, 2012 memo with a location map from OC Parks; and literature about Phoslock from SePRO Corporation, the company with distribution rights for the product in the United States.

Phoslock is the trade name for a modified bentonite clay technology containing 5% lanthanum which has the capability of rapidly removing free reactive (i.e. ortho or soluble) phosphorus as it moves through a water body. As the unbound Phoslock settles on the bottom of the water body, it integrates with the water body sediments and forms a thin (<2 mm) clay layer that integrate with natural sediments. Phoslock also works by binding free reactive phosphorus in the sediment pore water and reduces the release of phosphorus back into the water column.

Once applied, the Phoslock slurry temporarily gives the appearance of suspended sediment turbidity. The waterbody will have a cloudy or dull appearance for approximately 4-8 hours, and a return to normal water transparency in less than 24 hours, as the modified bentonite clay carrier for the Phoslock slowly settles through the water column.

Pollutants of concern with the application of Phoslock are bentonite clay and lanthanum. Without best management practices implementation, these pollutants may impact water quality standards including but not limited to: biostimulatory substances, color, floating material, pH, sediment, suspended and settleable solids, taste and odors, temperature, and turbidity.

Laguna Niguel Lake, which is located within Sulphur Creek, a tributary of Aliso Creek and the Pacific Ocean, is waters of the United States and consequently, discharges of pollutants to the lake are subject to Federal NPDES regulations.

¹ Information in the Background section is taken from the Report of Waste Discharge for the County of Orange, OC Parks Laguna Niguel Lake, dated February 6, 2012.

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I. PERMIT INFORMATION

Coverage under this Permit is limited to the discharge of Phoslock® brand lanthanum-modified clay to canals, ditches, lakes, ponds, reservoirs or other storage or constructed conveyance facilities that are surface waters of the United States (U.S.) for the purpose of inactivating soluble reactive phosphorus because the San Diego Water Board has received no requests for other types of phosphorus binding agents and the types of waterbodies were identified by the project proponent.

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

Discharger	Any person discharging pollutant wastes associated with the application of lanthanum-modified clay to surface waters in the San Diego Region
Name of Facility	Surface Waters in the San Diego Region
Major or Minor Facility	Minor
Threat to Water Quality	3
Complexity	C
Watershed	San Diego Region, See NOI for specific watershed
Receiving Water	Surface Waters in the San Diego Region
Receiving Water Type	Surface Waters in the San Diego Region

The facility is considered a “minor” facility based on the USEPA’s NPDES Permit Rating Work Sheet. According to this worksheet, any non-POTW (publicly owned treatment works) facility that scores less than 80 is considered minor unless otherwise rated major at the discretion of the regulatory agency.

The threat to water quality is considered a “Category 3” as defined in the California Code of Regulations TITLE 23, Division 3, Chapter 9, Waste Discharge Reports and Requirements, Article 1., Fees, Section 2200 (a)(1): Category “3” – Those discharges of waste that could degrade water quality without violating water quality objectives or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2. The discharge of Phoslock lanthanum-modified clay is not expected to cause permanent degradation of water quality. Any minor impairment of beneficial uses is expected to be temporal, lasting less than 48 hours following application.

The complexity is considered to be a “Category C” as also defined in the California Code of Regulations – Any discharger for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water code not included in Category A [toxics] or Category B [non-toxic but requiring treatment]. Included are dischargers having no waste treatment systems or that must comply with best management practices, dischargers having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal. The discharge of Phoslock lanthanum-modified clay does not require waste treatment system and must comply with best management practices, therefore its complexity is appropriately considered to be “Category C”.

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A. Discharger Eligibility Criteria

This Order requires both the property owner and applier to jointly obtain coverage through the Notice of Intent process. The owner has control over the financing or the decision to perform the application on the owner controlled waterbody. The applier (contractor or operator) has day-to-day control of the application and performs activities that are necessary to ensure compliance with this Order. California Water Code §13260 provides the legal authority for this requirement.

B. General Permit Application

As explained above, the San Diego Water Board received a Report of Waste Discharge for Phoslock specifically to Laguna Niguel Lake. Following review of the ROWD, it was decided to issue a "General" NPDES Permit rather than an "Individual" NPDES permit. This decision is based on the likelihood that in the future, (1) other entities will seek to discharge lanthanum-modified clay in a similar type operation to other waterbodies within the San Diego Region; (2) similar discharges of lanthanum-modified clay to surface waterbodies within the San Diego Region will be subject to the same narrative effluent limitations, best management practices, and operating conditions; and (3) similar future discharges of lanthanum-modified clay to surface waterbodies in the San Diego Region will require similar and same monitoring requirements. Consequently, the discharge of lanthanum-modified clay is more appropriately controlled under a general permit rather than several separate individual permits. The legal authority for General NPDES permits is found in the Code of Federal Regulations §122.28. This section of Federal Regulations also specifies the Notice of Intent process for enrolling under a General Permit.

C. Notice of Enrollment

On January 14, 2003, the Ninth Circuit Court of Appeals determined that applications for general permit coverage (for example the Notice of Intent (NOI) and the WQMP) must be made available to the public, the applications must be reviewed and determined to meet the applicable standard by the permitting authority before coverage commences, and there must be a process to accommodate public hearings.

Therefore, upon receipt of a WQMP and NOI, they will be posted on the San Diego Water Board's website for a 30 day public comment period. The San Diego Water Board will review the application package for completeness and applicability to this Order. If no comments are received and the WQMP is complete, the Executive Officer will issue a Notice of Enrollment. Permit coverage will begin when the Discharger receives the Notice of Enrollment.

The Notice of Enrollment provides the regulatory information to establish requirements. Since the Order is a "general" permit, the NOE provides the San Diego Water Board the mechanism to address any unique circumstances for an individual waterbody.

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D. Fees

Annual fees for permit coverage are required by California Water Code §13260(d)(1)(A). Fee schedule is established by California Code of Regulations section TITLE 23, Division 3, Chapter 9, Waste Discharge Reports and Requirements, Article 1, Fees, Section 2200.

E. Terminating Coverage

The discharger may choose to terminate coverage under this General Permit by submitting a complete and accurate Notice of Termination (NOT). 40 CFR §124.5 provides that coverage under a General Permit may be terminated by the discharger (permittee) in accordance with applicable state and federal laws. The Notice of Termination must include the facts or reasons supporting the request. The San Diego Water Board reviews the request and approves or denies the termination based upon the relevant facts. Coverage under the Permit is terminated on the date of the San Diego Water Board's approval of the NOT.

II. DISCHARGE DESCRIPTION

To accurately estimate the amount of Phoslock needed, water and sediment samples are collected and analyzed for phosphorus. The application rate for lanthanum is calculated from the amount of lanthanum that is chemically needed to bind the phosphorus in the lake. Containers of Phoslock granules are staged at a designated staging area on shore of the treated waterbody and loaded into application boats. The Phoslock granules are mixed into slurry in a collection tank on each boat, and broadcast evenly across the water's surface at a specific volume per acre. As the slurry settles through the water column, it binds and inactivates free reactive phosphorous. The bound phosphorus settles to the bottom as a stable insoluble mineral (LaPO_4). The unbound Phoslock also settles to the lake bottom helping prevent internal phosphorus loading from the sediment to the waterbody, and also binding any free reactive phosphorus that settles to the lake bottom. Application techniques may also include direct application of Phoslock granular material to the waterbody.

The typical Phoslock application rate range is less than 150 parts per million (ppm or milligrams per Liter or mg/L), with project specific dosing based on the amount of phosphorus targeted for inactivation. Once applied, the Phoslock slurry gives the appearance of suspended sediment turbidity. The waterbody will have a cloudy or dull appearance for approximately 4-8 hours, and generally returns to normal water transparency in less than 24 hours.

Lanthanum is a naturally occurring earth element and measureable background concentrations are found in soils throughout the world including the United States (USGS, 1984). Lanthanum is generally found in soil in a stable form (bound to an anion) and not chemically available for uptake in the soil or release into the water column. Background levels of lanthanum (bound in forms with chlorides, carbonates and phosphates) in water bodies sediments tested globally (US, Europe and Australia) have typically ranged from 12-36 mg/kg, with occasional extreme exceptional high and lows (Phoslock Water Solutions, 2011)

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Once lanthanum has bound with the phosphate in the water column and any phosphate released from the sediments, it forms the insoluble mineral, rhabdophane. The low solubility product of rhabdophane makes it unlikely under environmental conditions that either the phosphate or the lanthanum will be released over time.

Summary of Eco-Toxicity Studies

A Lanthanum bio-accumulation study compared fish and crayfish from two lakes in New Zealand; one to which Phoslock had been applied in three successive years and one in which no Phoslock application had taken place (Landman, 2007). The study reported no evidence of differences in physiological responses between the treated and untreated lakes.

Data were compiled from a range of sentinel water column invertebrates. Responses of these zooplankton species, including both mortality and reproduction, were evaluated throughout Phoslock exposures. The data is shown in Table F-2 below.

Table F-2. Summary of Phoslock toxicity to sentinel zooplankton species.

Species	Endpoint	Duration (days)	Lowest Observable Effect Concentration (LOEC) (mg/L Phoslock) ¹	Water Type	Reference
Ceriodaphnia dubia	Mortality	2	>50	Field	Ecotox 2008
Ceriodaphnia dubia	Reproduction	7	>1	Field	Ecotox 2008
Ceriodaphnia dubia	Mortality	7	>1	Field	Ecotox 2008
Ceriodaphnia dubia	Mortality	2	>12,500	Synthetic Soft	Stauber 2000
Daphnia magna	Mortality	2	>50,000	Synthetic Soft	Martin and Hickey 2004

Note: (1) Due to the amount of Phoslock needed to result in impacts to biota, studies did not test concentrations high enough to result in observable impacts, thus toxicity endpoints are reported as greater than the highest concentration tested and does not indicate the actual lowest observed effect levels.

The responses of numerous fish species to Phoslock exposure has been evaluated to determine potential risks following application. The data generated for several different fish species I summarized in Table F-3.

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Table F-3. Summary of Phoslock toxicity to sentinel fish species.

Species	Endpoint	Test Duration (hours)	Lowest Observed Effect Concentration (LOEC) (mg/L Phoslock) ¹	Water	Reference
Melanotaenia duboulayi	Mortality	96	> 50,000	Synthetic soft	Ecotox 2006a
Oncorhynchus mykiss	Mortality	96	> 3,125	Synthetic soft	Martin & Hickey, 2004
Oncorhynchus mykiss	Mortality	48	> 13,000	Natural pond-field	Watson-Leung, 2008

Note: (1) Due to the amount of Phoslock needed to see impacts to biota, studies did not test concentrations high enough to result in observable results, thus toxicity endpoints are reported as greater than the highest concentration tested and does not indicate the actual lowest observed effect levels.

Different benthic invertebrates have been evaluated in toxicity experiments to determine potential risks associated with Phoslock applications. Responses variables in these studies included survival, emergence time, growth and sex ratio at emergence. Table F-4 summarizes these findings.

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Table F-4. Summary of Phoslock toxicity to benthic invertebrates.

Species	Endpoint	Test Duration (Days)	Lowest Observed Effect Concentration (LOEC) (mg/L Phoslock) ¹	Water Type	Reference
Chironomus Zealandicus	Mortality & emergence & sex ratio	38	All > 400mg/L Phoslock	Lake	Clearwater 2004
Chironomus dilutus	Mortality	10	> 3,400	Pond	Watson-Leung, 2009
Polypedilum parvidum	Mortality	10	> 400	Field	Clearwater & Hickey 2004
hyalella azteca	Survival and growth	14	> 450	Pond	Watson-Leung, 2009
Hexagenia sp.	Survival and growth	21	> 450	Pond	Watson-Leung, 2009
Macrobrachium sp. (shrimp)	Mortality	4	> 50,000	Synthetic soft	Ecotox, 2006b
Macrobrachium sp.	Mortality	7	800	Synthetic soft	Ecotox, 2006b
Macrobrachium sp.	Mortality	14	800	Synthetic soft	Ecotox, 2006b

Note: (1) Due to the amount of Phoslock needed to result in impacts to biota, studies did not test concentrations high enough to result in observable impacts, thus toxicity endpoints are reported as greater than the highest concentration tested and does not indicate the actual lowest observed effect levels.

Summary of Human Health Studies

Direct Ingestion. Lanthanum has been approved by the United States Food and Drug Administration (FDA) for human use to regulate phosphorus absorption. The FDA-approved human dose rate for Fosrenol is 750 to 3,000 mg/day. Persy, et al (2006) reported no hepatotoxic effect in human patients undergoing long-term treatment with Fosrenol, a FDA approved prescription drug containing lanthanum for phosphorus absorption in human blood.

Fish Consumption. The risk via consuming Phoslock/lanthanum in fish harvested from Phoslock treated water after application was investigated after three successive

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applications of Phoslock in Lake Okareka, New Zealand (Landman et al., 2007). The highest concentration of lanthanum measured in the liver of male and female trout in Lake Okareka after one and two months of Phoslock application was 1.2 and 0.8 mg/kg. Similarly, the highest concentration of lanthanum in the hepatopancreas tissues of male and female trout was 0.8 and 1.0 mg/kg respectively (Landman et al., 2007). Therefore, in total the highest concentration of lanthanum in one trout was 2.0 mg/kg. Thus, a person would need to consume 826 pounds of fish per day to ingest the minimum dose of Lanthanum that corresponds to the lowest Fosrenol daily intake approved by the US FDA.

Drinking Water. The Phoslock phosphorus locking technology is NSF/ANSI² Standard 60 certified for use in drinking water. This certifies that Phoslock applications, at the maximum use rate specified on the SePRO Corporation Phoslock label, does not contribute contaminants that could cause adverse human health effects.

Hazardous Characteristics. Phoslock is not considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 12910.1200). Lanthanum and the clay used in the formulation are not listed on the USEPA Toxic Substances Control Act inventory list. Phoslock lanthanum modified clay has been used extensively on waterbodies in Australia and is not on the Australian National Occupational Health and Safety Commission (OHSC) List of Designated Hazardous Substances (NOHSC, 1999a). Permits for the application of lanthanum modified clay have been adopted by the states of New York and Washington³.

No risk has been associated with contact of Phoslock. The main potential for human exposure to Phoslock is during the application process. Due to small particulates in the formulation, there could be some potential eye irritation and inhalation to applicators and handlers during application. The use of appropriate personal protective equipment (PPE) is recommended by the package label.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges of lanthanum-modified clay to surface waters within the San Diego Region. This General

² National Sanitation Foundation / American National Standards Institute

³ State of Washington, Aquatic Plant and Algae Management General Permit, NPDES Permit No. WAG994000, April 4, 2012. State of New York, Phoslock Application to Mill Pond, SPDES Permit No. NY 0267473, April 9, 2012.

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Permit also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Pursuant to California Water Code section 13389, San Diego Water Boards are exempt from the requirements to comply with Chapter 3, of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans. The Regional Water Quality Control Board (San Diego Water Board) adopted a Water Quality Control Plan for the San Diego Basin (hereinafter Basin Plan) on September 8, 1994 (with amendments on or before April 4, 2011) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan.

The Basin Plan at page 2-12 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan does not specifically identify beneficial uses for all surface waters within the San Diego Region. Any surface waters not specifically listed (generally smaller tributaries) are designated with the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Thus, beneficial uses applicable to surface waters are as follows:

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Table F-5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
Various	Inland Surface Waters	Municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PROC), ground water recharge (GWR), hydropower generation (POW), contact water recreation (REC1), noncontact water recreation (REC2), biological habitats of special significance (BIOL), warm freshwater habitat (WARM), cold freshwater habitat (COLD), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), spawning (SPWN).
Various	Coastal Waters (Pacific Ocean, Enclosed Bays and Estuaries, Harbors, and Lagoons)	Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitats (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), Aquaculture (AQUA), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).

Requirements of this Order implement the Basin Plan.

- 2. California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005 and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table F-6. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
Various	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting.

Section III.E.1 of the Ocean Plan provides that waste shall not be discharged to areas designated as being of special biological significance (ASBS). Section III.E.2. provides that the San Diego Water Board may, however, approve waste discharge requirements or recommend certification for limited-term (i.e. weeks or months) activities in ASBS. Limited term activities may result in temporary and short-term

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changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade water quality or result in water quality lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented.

- 3. National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain federal water quality criteria for priority pollutants.
- 4. State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the San Diego Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
- 5. Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.

The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. § 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge, which will limit impacts to the area being treated to a very short time and expected to cause no lasting detrimental impacts on existing water quality. In addition, the discharge is expected to have a net benefit to water quality through the reduction of phosphorus. Dischargers seeking authorization to discharge under this General Permit are required to demonstrate compliance with receiving water limitations during the application. If however, the San Diego Water Board finds that

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the impact of a discharge has potential to be significant, then authorization for coverage under this General Permit will be denied and coverage under an individual permit will be required (including preparation of an antidegradation analysis).

- 6. Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at Title 40, Code of Federal Regulations⁴ section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

Satisfaction of Anti-backsliding requirements is not required in this Order because this a new NPDES permit.

7. Endangered Species Act Requirements

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

D. Impaired Water Bodies on CWA 303(d) List

The federal Clean Water Act requires States to identify and make a list of surface water bodies that are polluted. These water bodies, referred to in law as "water quality limited segments," do not meet water quality standards even after discharges of wastes from point sources have been treated by the minimum required levels of pollution control technology. Wastewater treatment plants, a city's storm drain system, or a boat yard, are a few examples of point sources that discharge wastes to surface waters. States are required to compile the water bodies into a list, referred to as the "Clean Water Act Section 303(d) List of Water Quality Limited Segments" (303(d) List). States must also prioritize the water bodies on the list and develop action plans, called total maximum daily loads (TMDLs) to improve the water quality.

The San Diego Water Board adopted the 2008 Clean Water Act Sections 305(b) and 303(d) Integrated Report on Evaluation of Surface Water Quality and Listing of Impaired Water Body Segments for the San Diego Region (2008 Integrated Report) on December 16, 2009. The final 2008 Integrated Report was incorporated into the statewide 2010 Integrated Report that was approved by the State Water Board on August 4, 2010. On November 12, 2010, USEPA approved the 2008-2010 CWA Section 303(d) List that includes listings for the San Diego Region.

⁴ All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

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For an updated list of impaired waterbodies please visit:
http://www.waterboards.ca.gov/sandiego/water_issues/programs/303d_list/index.shtml

E. Other Plans, Policies and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibitions

The discharge prohibitions as specified in section IV are standard prohibitions found in other San Diego Water Board permits and are based on the California Water Code, the Clean Water Act and the Basin Plan.

B. Effluent Limitations and Discharge Specifications

This General Permit will authorize the discharge of lanthanum-modified clay that may pose a threat to water quality and beneficial uses of the receiving waters. The primary mechanism for regulating such discharges will be through the development and implementation of BMPs as required by section V.A of this Order.

NPDES regulations [40 CFR 122.44(k)] allows for the use of BMPs to control or abate the discharge of pollutants under certain circumstances, including when numeric effluent limitations are infeasible. Proper implementation of BMPs will assure the protection of water quality within the receiving waters. Dischargers enrolled under this General Permit are expected to comply with all water quality objectives through the implementation of BMPs.

NPDES regulations [section 122.44(k)] acknowledge that BMPs shall be included as permit conditions when (1) numeric effluent limitations are infeasible or (2) necessary to achieve narrative effluent limitations or carry out the purpose and intent of the CWA. Numeric effluent limitations are infeasible for the following reasons:

- (1) Lanthanum-modified clay is designed for direct application to water bodies to remedy a known water quality concern of elevated phosphorus concentrations in the water body. Because of the direct application of this product, the undiluted product would be considered the effluent discharged to the receiving water.

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- (2) No known water quality criterion has been promulgated for lanthanum or its byproducts.
- (3) Treatment of the product would render the application of lanthanum-modified clay useless for binding phosphorus.

For the aforementioned reasons, this Order does not contain numerical effluent limitations, but the use of BMPs to control and abate the discharge of lanthanum-modified clay to surface waters in the San Diego Region. The Order in section V.A requires the development of a Water Quality Management Plan (WQMP) that identifies the specific BMPs to be implemented by a project subject to the Order.

The BMPs required herein constitute BAT and BCT and will be implemented to minimize the area and duration of impacts caused by the discharge of lanthanum-modified clay in the treatment area and to allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event. The development of BMPs provides the flexibility necessary to establish controls to minimize the area extent and duration of impacts caused by the discharge of lanthanum-modified clay. This flexibility allows dischargers to implement appropriate BMPs for different types of applications and different types of waters.

The General Permit requires that Dischargers use BMPs when implementing control programs in order to mitigate effects to water quality resulting from lanthanum-modified clay applications. Dischargers are required to consider source control measures to prevent future inputs of nutrients to the treated waterbody. Source control prevention BMPs is the preferred method to control elevated levels of phosphorus in surface waters. Lanthanum-modified clay should only be used as a last resort when source control BMPs have failed to adequately protect the receiving water in a reasonable timeframe.

The WQMP must describe the unique characteristics of the waterbody and its upstream and downstream watershed. This information is necessary to properly understand the beneficial uses that may be impacted. Also, this information provides surface area, volume, historic monitoring, inflowing streams, and outflowing streams that are necessary to calculate the appropriate application rate of lanthanum-modified clay for binding phosphorus but not leaving excessive residual.

The WQMP must describe the time period for application. This information is needed to ensure that the application does not occur in times of heavy recreational use as a precaution to limit public exposure or during storm events causing excessive product to flow downstream or causing volume fluctuations in the receiving waterbody that would require altering the application rate.

The WQMP will describe the application rate for lanthanum-modified rate. This information is needed to ensure that the application rate does not exceed what is stoichiometrically necessary to bind the free phosphorus in the waterbody; otherwise

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the application may result in residual lanthanum in the waterbody above background concentrations.

The WQMP will describe BMPs necessary to prevent discharges to downstream waterbodies. The NOI and NOE process is specific for the application of lanthanum-modified clay to the intended waterbody. The transport of lanthanum-modified clay or the bound lanthanum phosphate to downstream waters may have unknown unintended consequences that should be prevented as a precautionary measure. Timing is first and foremost the best method to prevent downstream discharges. The application should be timed during a period when the intended waterbody is not discharging to downstream waters and during a period when rainstorms are unlikely. When that is infeasible, other methods to prevent downstream discharge must be deployed such as silt curtains or berms. This Order does not replace or excuse any CWA §404 and §401 requirements for dredge and fill of U.S. waters.

The WQMP will include the monitoring plan in compliance with Attachment E. This monitoring gives the discharger the information that is needed on the effectiveness of the application and the overall effectiveness of the BMPs. Using this information, the discharger can adapt and modify their practices as warranted to protect water quality.

The WQMP will describe “good-housekeeping” measures to prevent spills, leaks, and unintended discharges. Spills, leaks, and unintended discharges result in an uneven application of lanthanum-modified clay to the waterbody which may result in temporal and spatial differences in lanthanum concentration throughout the waterbody that are above background levels. Spill and leaks of product in staging areas could result in unintended discharges during rain events.

The WQMP will describe personnel training for the proper application of lanthanum-modified clay. Training is especially important for site personnel responsible for the application of lanthanum-modified clay because they are the ones implementing the BMPs to protect water quality. Successful implementation of BMPs is dependent on effective training of site personnel. Without successful implementation, water quality would not be adequately protected and resources spent on BMPs would be wasted from their intended purpose.

The WQMP will describe measures to take in the event of an exceedance of receiving water limitations. When all else has failed and the application has resulted in an exceedance of receiving water limitations, the discharger must take the necessary measures to address the cause of exceedance and correct the exceedance. These must include notifications to the San Diego Water Board and ceasing discharge.

The WQMP will describe source control measures to prevent future inputs of nutrients to the treated waterbody. Pollution prevention and source controls are the preferred method of preventing phosphorus exceedances in surface waterbodies from recurring over treatment controls. Pollution prevention is an essential aspect of BMP implementation. By limiting the generation of phosphorus from activities within the watershed, less phosphorus is available to be washed into the receiving waterbody. In

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addition, there is no need to control or treat phosphorus that is not generated. In general, source control is more cost effective than eventual treatment of the waterbody.

C. Stringency of Requirements for Individual Pollutants

This Order requires the Discharger to develop and implement BMPs to regulate and control the discharge of waste. The requirements established by this Order are no more stringent than necessary to implement the mandates of the CWA.

D. Water Quality Management Log

The Order requires the Discharger to maintain an information log on the application of lanthanum-modified clay. The log provides information helpful to the discharger in ensuring and maintaining compliance. The log can be used to review procedures and make changes to improve BMP implementation and performance.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

CWA section 303(a-c), requires states to adopt water quality standards, including criteria necessary to protect beneficial uses. The San Diego Water Board adopted water quality criteria as water quality objectives in the Basin Plan. Basin Plans include numeric and narrative water quality objectives for various beneficial uses and water bodies. This General Permit requires compliance with the Basin Plans' beneficial uses, water quality objectives, and implementation plans. This General Permit also requires compliance with the State Water Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

Once lanthanum-modified clay has been applied to a treatment area, the product binds with free phosphorus in the water within the treatment area. The discharge of lanthanum-modified clay, their residues, and their degradation byproducts from the applications to surface water must meet applicable water quality criteria and objectives. The receiving water limitations ensure that following application, the receiving water does not result in an exceedance of a water quality standard.

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall

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not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the MCLs set forth in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

The Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

The Order requires compliance with all beneficial uses, water quality objectives, and implementation plans in the San Diego Water Board's *Water Quality Control Plan for the San Diego Basin* (Basin Plan). The Order brings attention to those water quality objectives that are most likely to be affected from the application of Phoslock Lanthanum-modified clay. Compliance with the receiving water limitations will be determined by assessment of the results of the monitoring conducted in accordance with Attachment E.

B. Groundwater – Not Applicable

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the San Diego Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following sections of the fact sheet provide the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring – Not Applicable

C. Whole Effluent Toxicity Testing Requirements – Not Applicable

D. Receiving Water Monitoring

1. Surface Water

Receiving water monitoring is necessary to answer two critical questions:

- 1. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of receiving water limitations?**
- 2. Does the discharge of lanthanum-modified clay cause or contribute to an exceedance of the “not toxics in toxic amount” narrative toxicity objective?**

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Data collected from monitoring can be assessed to determine the effectiveness of programs and practices used during the application. All forms of testing have some degree of uncertainty associated with them. The more limited the amount of test data available, the larger the uncertainty. The intent of this General Permit's sampling program is to select a number that will detect most events of noncompliance without requiring needless or burdensome monitoring.

Extensive monitoring on the effects of lanthanum-modified clay on water quality has been done in Australia, Europe and other states within the U.S. This monitoring has been summarized above in section II of the Fact Sheet. The monitoring required by this Order builds on and replicates the monitoring that has been done previously.

The discharger develops their monitoring program in the WQMP describing the tasks and time schedules in which these two key questions will be addressed. Monitoring shall take place at several locations surrounding and within the receiving water body; including upstream and downstream monitoring.

The monitoring program described in the WQMP must consider watershed specific attributes and waste constituents, based on the characteristics of waterbodies upstream and downstream of the application area, as well as the receiving water quality conditions. The receiving waterbodies could have constant water flow into the receiving water from urban runoff or natural sources. Also, the receiving waterbody may be impounded without downstream discharge or may be flowing to downstream receiving waters. Developing the details of a monitoring design requires clearly defining the design and then organizing these in a logical framework that supports effective decision making about indicators, monitoring locations, and monitoring frequency. The logical framework should describe:

1. The basic geographic and hydrographic features of the area, particularly application points and the pathways(s) of residue flows;
2. Lanthanum-modified clay application practices and how they are distributed in space and time;
3. Relevant knowledge about the transport, fates, and effects of lanthanum-modified clay, including best- and worst-case scenarios;
4. Description of the designated beneficial uses in each water body;
5. Relevant knowledge about the action of cumulative and indirect effects;
6. Mechanisms through which lanthanum-modified clay applications could lead to designated use impacts, given the basic features of the area;
7. Known and potential impacts of lanthanum-modified clay applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration;
8. Sufficient number of sampling areas to assess the entire area of influence from the application; and

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9. A description of sampling methods and a sampling schedule.
10. The monitoring requirements have been designed for freshwater inland surface waters.

The visual, physical, and chemical constituents/parameters have been carefully chosen as those most likely to be found following application of the lanthanum-modified clay and resulting in an exceedance of an applicable receiving water limitation. Lanthanum and phosphorus are both sampled in the water column and in the sediment because as lanthanum binds with the free phosphorus, it precipitates out and settles in the bottom sediments. Turbidity is sampled because the clay slurry application of lanthanum to the receiving water will cause a temporary slight increase in the turbidity of the receiving water. Bench scale lab tests have shown the turbidity to spike up to 30 NTU following application of Phoslock and turbidity returning to background levels within 24 hours.⁵

The monitoring frequency must include pre-event, during the event, and post-event monitoring at several locations upstream, within the application area receiving waterbody and downstream. Pre-event sampling provides relevant background monitoring information for comparison and determining appropriate application rates. During and Post-event monitoring provides data for compliance purposes and evaluating the two key questions above.

2. Groundwater – Not Applicable

E. Other Potential Monitoring Requirements

1. Bioassessment monitoring

Previous applications of Phoslock lanthanum-modified clay around the world have not included bioassessment monitoring as part of their protocol. The San Diego Water Board reserves the discretion through the Notice of Enrollment to require bioassessment monitoring to fill this data gap on the application of Phoslock lanthanum-modified clay. Bioassessment monitoring is a cost-effective tool that measures the effects of water quality over time. It is an important direct indicator of stream health and impacts from discharges. It can detect impacts that chemical and toxicity monitoring cannot. USEPA encourages permitting authorities to consider requiring biological monitoring methods to fully characterize the nature and extent of impacts from discharges.

Bioassessment is the direct measurement of the biological condition, physical condition, and attainment of beneficial uses of receiving waters (typically using benthic macroinvertebrates, periphyton, and fish). Bioassessment monitoring integrates the effects of both water chemistry and physical habitat impacts (e.g., sedimentation or erosion) of various discharges on the biological community native to the receiving waters. Moreover, bioassessment is a direct measurement of the

⁵ Bishop, Evaluation of turbidity Changes and Settling Rate Following Application of Phoslock, SePro Research & Technology Campus, June 2012.

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impact of cumulative, sub-lethal doses of pollutants that may be below reasonable water chemistry detection limits, but that still have biological effects.

The bioassessment monitoring as described by this Order is consistent with the State's Surface Water Ambient Monitoring Program. The data from this monitoring can be used to assess permit compliance. In addition, other entities such as local municipalities or non-governmental organizations may use the data to improve their practices and programs for protecting water quality.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

This General Permit may be reopened for modification and reissuance in accordance with the provisions contained in 40 C.F.R. §122.62, and for the following reasons:

- 1) Violation of any terms or conditions of this Order or the Notice of Enrollment from the San Diego Water Board;
- 2) Obtaining enrollment under this Order, or a Notice of Enrollment from the San Diego Water board, by misrepresentation or failure to disclose fully all relevant facts;
- 3) A change in any condition that requires either a temporary or permanent reduction or elimination of the discharge subject to waste discharge requirements;

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- 4) Promulgation of new or amended regulations by the State Water Board, San Diego Water Board or USEPA, including revisions to the Basin Plan;
- 5) Receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with the provisions of 40 CFR 122, 123, 124, and 125;
- 6) The San Diego Water Board determines that continued discharges may cause unreasonable degradation of the aquatic environment; and
- 7) The General Permit may be re-opened to add additional or new active ingredients for phosphorus mitigation.

The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order or an associated discharge Notice of Enrollment from the San Diego Water Board, or a notification of planned change in or anticipated noncompliance with this Order or discharge Notice of Enrollment does not stay any condition of this Order or the Notice of Enrollment from the San Diego Water Board.

- 2. Special Studies and Additional Monitoring Requirements – Not Applicable**
- 3. Construction, Operation, and Maintenance Specifications – Not Applicable**
- 4. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable**
- 5. Other Special Provisions – Not Applicable**
- 6. Compliance Schedules – Not Applicable**

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of Phoslock lanthanum-modified clay. As a step in the WDR adoption process, the San Diego Water Board staff has developed tentative WDRs. The San Diego Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The San Diego Water Board has notified the public 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 and recommendations. Notification was provided on Oct. 15, 2012 by email to the known interested parties and posted on the San Diego Water Board's website.

Our Web address is <http://www.waterboards.ca.gov/sandiego/> where the public has been provided access to the agenda including any changes in dates and locations.

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B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDRs as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the San Diego Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the San Diego Water Board, written comments were due at the San Diego Water Board offices **by 5:00 p.m. on Nov. 15, 2012.**

C. Public Hearing

The San Diego Water Board held a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: **December 12, 2012**
Time: 9:00 AM
Location: Water Quality Control Board
Regional Board Meeting Room
9174 Sky Park Court
San Diego, CA

Interested persons were invited to attend. At the public hearing, the San Diego Water Board heard testimony pertinent to the discharge, WDRs, and permit. For accuracy of the record, important testimony was requested in writing.

D. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the San Diego Water Board by calling (858) 467-2952.

E. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the San Diego Water Board regarding the final WDRs. The petition must be submitted within 30 days of the San Diego Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

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F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the San Diego Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Ben Neill at (858) 467-2952.

IX. REFERENCES

Clearwater SJ. 2004. Chronic exposure of midge larvae to Phoslock. NIWA (National Institute of Water & Atmospheric Research). Prepared for Ecowise Environmental Pty Ltd. NIWA Client Report No. AUS2004-005, August 2004.

Clearwater SJ and CW Hickey. 2004. Ecotoxicity testing of Phoslock on sediment-dwelling aquatic biota and rainbow trout. NIWA (National Institute of Water & Atmospheric Research). Prepared for Ecowise Environmental Pty Ltd. NIWA Client Report No. AUS2004-004, June 2004.

ECOTOX. 2008. Toxicity assessment of Granulated Phoslock to the Cladoceran Ceriodaphniadubia. Report prepared for Phoslock Water Solutions Ltd. ECOTOX Services Australasia. July 2008.

Damment S.J.P. and M. Pennick. 2007. Systemic lanthanum is excreted in the bile of rats. *Toxicol Lett* 171: 69 – 77.

Kearny Foundation Special Report, 1996, Background concentrations of trace and major elements in California soils. Kearny Foundation of Soil Science, Division of Agriculture and Natural Resource, University of California

Landman M., Brijs J., Glover C. and N. Ling 2007. Lake Okareka and Tikitapu Fish Health Monitoring 2007. Scion Report. October 2007.

Lurling M., Tolman Y. 2010. Effects of lanthanum and lanthanum-modified clay on growth, survival and reproduction of *Daphnia magna*. *Water Research*. 44(1):309-19

Martin M.L., and C.W. Hickey. 2004. Determination of HSNO ecotoxic thresholds for granular Phoslock™(Eureka 1 formulation) phase 1: Acute toxicity. NIWA (National Institute of Water & Atmospheric Research) Client Report No. HAM2004- 137, October 2004.

Stauber J.L. 2000. Toxicity testing of modified clay leachates using freshwater organisms. CSIRO Centre for Advanced Analytical Chemistry Energy Technology. Report no. ET/IR267R. Prepared for CSIRO Land and Water. March 2000.

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Persey et al. 2006. Lanthanum: A Safe Phosphate Binder, *Seminars in Dialysis* 19 (3), 195-9.

Shacklette, H.T., Boerngen, J.G.m 1984, Element concentrations in soils and other surficial materials of the conterminous United States. U.S. Department of the Interior, U.S. Geological Survey.

Stauber J.L. and M.T. Binet. 2000. Canning River Phoslock field trials – Ecotoxicity testing final report. CSIRO Centre for Advanced Analytical Chemistry Energy Technology. Report no. ET317R. Prepared for CSIRO Land and Water and the WA Water and Rivers Commission. August 2000.

Watson-Leung T. 2009. Phoslock Toxicity Testing with three Sediment Dwelling Organisms (*Hyalella azteca*, *Hexagenia* spp. And *Chironomus dilutes*) and Two Water Dwelling Organisms (Rainbow Trout and *Daphnia magna*). Aquatic Toxicology Unit, Ontario Ministry of the Environment, Ontario, Canada.

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ATTACHMENT G – DISCHARGE PROHIBITIONS CONTAINED IN THE BASIN PLAN

1. The discharge of waste to waters of the State in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in CWC section 13050, is prohibited.
2. The discharge of waste to land, except as authorized by WDRs of the terms described in CWC section 13264 is prohibited.
3. The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in CWC section 13376) is prohibited.
4. Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this San Diego Water Board issues an NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State of California Department of Public Health and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.
5. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the San Diego Water Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.
6. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is authorized by the San Diego Water Board.
7. The dumping, deposition, or discharge of waste directly into waters of the State, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the San Diego Water Board.
8. Any discharge to a storm water conveyance system that is not composed entirely of storm water is prohibited unless authorized by the San Diego Water Board. [The federal regulations, 40 CFR 122.26(b)(13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.] [Section 122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

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9. The unauthorized discharge of treated or untreated sewage to waters of the State or to a storm water conveyance system is prohibited.
10. The discharge of industrial wastes to conventional septic tank/ subsurface disposal systems, except as authorized by the terms described in CWC section 13264, is prohibited.
11. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the State is prohibited.
12. The discharge of any radiological, chemical, or biological warfare agent into waters of the State is prohibited.
13. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the San Diego Water Board.
14. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the State or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.
15. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.
16. The discharge of untreated sewage from vessels to San Diego Bay is prohibited.
17. The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at MLLW is prohibited.
18. The discharge of treated sewage from vessels, which do not have a properly functioning USCG certified Type 1 or Type II marine sanitation device, to portions of San Diego Bay that are greater than 30 feet deep at MLLW is prohibited.

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ATTACHMENT H – LIST OF PRODUCTS

Product Name	Active Ingredient
Phoslock	Lanthanum-modified clay