California Regional Water Quality Control Board
Santa Ana Region

Winston H. Hickox
Secretary for Environmental Protection

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September 24, 2002

Mr. Peter R. Duchesneau
Manatt, Phelps & Philips
11355 West Olympic Boulevard
Los Angeles, CA 90064-1614

DIRECTIVE TO PROCEED WITH INITIAL PHASE OF PERCHLORATE INVESTIGATION IN THE VICINITY OF THE FORMER GOODRICH FACILITY, CITY OF RIALTO, SAN BERNARDINO COUNTY, CALIFORNIA

Dear Mr. Duchesneau:

As you are aware, perchlorate has been detected in municipal water supply wells in the Rialto and Colton Groundwater Subbasins. These water supply wells are located downgradient of the 160-acre site (site) of the former Goodrich Corporation (Goodrich) facility. During the 1950s and 1960s, Goodrich manufactured and tested solid rocket propellant at the site, using perchlorate salt as an oxidizer for the propellant. This letter sets forth a requirement under California Water Code Section 13267 that you conduct an investigation to define the lateral and vertical extent of perchlorate in soil and groundwater at the former Goodrich property in Rialto. As required by that provision, this letter contains an explanation of the need for the investigation, and cites evidence supporting the requirement.

Background

Perchlorate contamination was first detected in groundwater in the Rialto and Colton Subbasins in 1997. At that time, the California Department of Health Services (DHS) Action Level (AL) for perchlorate in drinking water was 18 parts per billion (ppb). Two wells had perchlorate levels exceeding 18 ppb and were shut down. In January 2002, the DHS lowered the AL to 4 ppb. In response to the reduced AL for perchlorate, the local water purveyors in the Rialto and Colton Groundwater Subbasins restricted or eliminated the use of additional production wells with perchlorate concentrations that exceeded 4 ppb. Between 1997 and the present, various suspected perchlorate dischargers, including Goodrich, have been identified.

Requirement for an Investigation

Board staff first contacted Goodrich in August 2001, requesting that they provide information regarding their historical activities at the Rialto site and conduct an investigation of soil and groundwater at the site. During subsequent correspondence, Goodrich agreed to initiate a limited, phased investigation at the site. Goodrich submitted a draft work plan for the limited groundwater investigation in May 2002. Subsequently, I issued Cleanup and Abatement Order (CAO) No. R8-2002-0051 on June 6, 2002. The CAO, in part, required Goodrich and the Kwikset Corporation to submit a proposal with a one-year implementation schedule to obtain information and define the lateral and vertical extent of the perchlorate in soil and groundwater.

The CAO was rescinded by the Board on September 13, 2002, after you (on behalf of Goodrich) provided assurance to the Board that Goodrich would proceed with the perchlorate investigation in cooperation with Board staff and the local water purveyors. The Board then directed staff to issue individual letters under California Water Code Section 13267 to Goodrich and the other suspected perchlorate dischargers that have been identified. The Board also expressed a strong desire that the suspected perchlorate dischargers work with the local water purveyors to provide replacement water during the loss or limited use of their production wells.

The Need for the Investigation

The Santa Ana Regional Water Quality Control Board is charged with the protection of water quality in this Region. We have been working actively with the water purveyors for several years to identify the extent and address the impact of perchlorate contamination on water resources in the Colton and Rialto Groundwater Subbasins. The water purveyors whose wells have been contaminated with perchlorate now face a state of emergency, and may not be able to provide an adequate water supply to their customers. It is urgent that the sources of the contamination be identified, and the magnitude of the perchlorate plume defined.

Evidence Supporting the Requirement for an Investigation

Enclosed as attachments are the following documents:

1. Attachment 1 – Correspondence between RWQCB and Goodrich Corporation
2. Attachment 2 – Well Location Map, showing perchlorate contamination in municipal water supply wells.
3. Attachment 3 – Written summary by Mr. John Kase, former employee of Goodrich.
4. Attachment 4 – Declaration of August 27, 2002 by Mr. John Kase, former employee of Goodrich.

The evidence demonstrates that Goodrich used perchlorate salts at the Rialto site during the 1950s and 1960s. Groundwater data indicates that perchlorate concentrations exceed the AL in municipal water supply wells that are located downgradient of the former Goodrich facility. Based on the evidence, Goodrich is suspected of having discharged perchlorate waste that has adversely affected water quality. This evidence supports the requirement for an investigation, as defined in Section 13267(b)(1) of the California Water Code.

Specific Comments on the Proposed Work Plan for the Investigation

On July 17, 2002, Goodrich submitted a revised work plan entitled “Implementation Schedule and Work Plan in Response to Cleanup and Abatement Order No. R8-2002-0051 Issued to Goodrich Corporation.” This work plan was prepared by Conestoga-Rovers & Associates (CRA). According to CRA, Goodrich proposes to obtain and assess available information concerning the perchlorate in local water supply wells, the local hydrogeology, and other pertinent information, prior to proposing a long-term comprehensive work plan for an investigation of the perchlorate contamination and any future remediation, if necessary. Goodrich proposes to implement a phased program, where the necessity for further investigation will be determined after completion of the first two phases outlined in the work

plan. Goodrich proposes to work with Board staff to determine how to proceed with additional phases of investigation.

Goodrich proposes to drill two boreholes, each containing two nested monitoring wells, along the downgradient perimeter of the 160-acre site. These monitoring wells are proposed to be utilized to measure groundwater elevations, and to obtain representative groundwater samples for chemical analyses. Goodrich proposes that one well pair be located along Locust Avenue approximately 600 feet north of the intersection of Summit Avenue and Locust Avenue. The other well pair is proposed to be located along the extension of Summit Avenue, approximately 800 feet west of the intersection of Summit Avenue and Locust Avenue. Any necessary well permits will be obtained, and a health and safety (H&S) plan and quality assurance plan will be submitted to the RWQCB. The H&S plan will be in place prior to the commencement of drilling activities.

CRA recognizes that three aquifer zones (A, B, and C) are present. A discussion of the three aquifer zones is included in conjunction with Board staff's recommendations, below. The monitoring wells are proposed to be located in 12-inch diameter boreholes drilled by the air percussion method. A continuous core sample is proposed to be obtained through the A/B aquitard (confining layer) to a depth of 15 feet into Aquifer B, the second aquifer. Monitoring wells are proposed to be completed using Schedule 80 PVC well screen, 1.913-inch ID, 15–foot screen length, and No. 20 slot machined openings, threaded and flush-coupled joints.

The wells are proposed to be developed to a silt-free condition prior to collection of groundwater samples. Soil samples are proposed to be obtained from split-spoon samplers or from a continuous core at each borehole location. Soil samples are proposed to be analyzed for grain size (sieve analyses) in accordance with ASTM Method D422. Groundwater samples are proposed to be collected and water quality constituents analyzed according to the standard USEPA Method protocols pertinent to the individual chemicals being analyzed for. Proper chain-of-custody procedures are proposed to be strictly adhered to. One round of groundwater sampling and analysis is proposed to be performed immediately, followed by a confirmation round one month later. The need for future monitoring events is proposed to be determined after reviewing the analytical results.

Based on our review of the work plan, and the comments received from Kennedy/Jenks Consultants on behalf of the Inland Empire Perchlorate Regulatory Task Force, we concur with the phased-approach investigation of soil and groundwater in the immediate vicinity of the former 160-acre Goodrich facility, with the following conditions:

1. For the initial phase of the groundwater investigation at the former 160-acre site, a minimum of three downgradient and one upgradient groundwater monitoring well pairs should be installed. We believe that two nested monitoring wells should be installed at each of three separate locations downgradient, along the southern boundary of the former site, in an alignment along the extension of Summit Avenue. One downgradient well pair should be located approximately 600 feet west of the intersection of Summit Avenue and Locust Avenue, and another pair should be approximately 2,100 feet west of that intersection. The third downgradient monitoring well location should be along Locust Avenue, approximately 600 feet north of the intersection as illustrated on Figure 1 of your work plan. We recognize that it may be difficult to obtain access to private property upgradient of the former Goodrich site. The upgradient well location may be situated in the right-of-way of Casa Grande Park Avenue (just west of Alder Avenue), if feasible. The final locations of the monitoring wells will be subject to my review and approval.

2. The monitoring wells should be drilled to a minimum depth of 500 feet bgs using air rotary casing-hammer drilling techniques. Centralizers should be used to position each monitoring well screen within the borehole. Discrete soil samples should be collected within 10 feet of the top and bottom of the aquitard that separates the A-zone and B-zone aquifers, to assess potential residual presence of perchlorate. These discrete soil samples should be collected using a drive barrel sampler equipped with a stainless steel sampling tube.

3. According to drilling logs and monitoring data from monitoring wells at the Mid-Valley Sanitary Landfill (MVSL), the general aquifer conditions for the immediate area of the 160-acre site consists of three aquifers (A, B, and C), separated by two fine-grained aquitards. The depth to the first aquitard is approximately 330 feet below ground surface (bgs). The second aquitard is approximately 485 feet bgs. Based on recent (June 2002) groundwater elevation measurements for existing monitoring wells at the MVSL, groundwater was encountered at approximately 395 feet bgs (F-6 monitoring well). This information indicates that the groundwater is currently present in the lower portion of the B-zone aquifer, while the A-zone aquifer is currently dry.

4. Drilling activities for the four new wells at the MVSL were initiated on August 3, 2002. These recent activities provide good reference data for planning the proposed drilling project at the former Goodrich site. In August, the first groundwater zone was encountered at approximately 395 to 399 feet bgs. Further, it was determined through depth-discrete groundwater sampling that perchlorate is present in the groundwater throughout the entire depth of the B-zone aquifer east of the landfill (downgradient of the former Goodrich site). Therefore, your proposed drilling procedure should include a depth-discrete sampling program for groundwater, utilizing temporary wells to collect the samples throughout the drilling operation. Once the borehole approaches the anticipated depth of first groundwater, groundwater samples should be collected by installing and sampling temporary wells (two-inch diameter, segmented, threaded Schedule 80 PVC casing). Based on the laboratory analytical results for samples collected from the temporary wells, the most impacted groundwater zone should be identified, in consultation with Regional Board staff, and a permanent monitoring well should be installed in that zone. Well screen intervals may be 20 to 30 feet in length, but should not exceed 30 feet in length.

5. Based, in part, on our review of design components for local monitoring wells, including those installed at the MVSL, Board staff believes that the two-inch inner diameter (ID), schedule 80 PVC monitoring wells proposed by CRA may not provide the structural strength necessary for the anticipated well depth (greater than 480 feet total depth). Based on our experience, the two-inch ID PVC casings are likely to bend or break during installation, owing to the depth of the borehole and weight of the PVC on the threaded pipe sections. Two-inch ID stainless steel casings have been used successfully at other sites in this locality, and the wells have proven to be problem-free, both during installation and post-installation, as intended for short-term monitoring programs in shallower zones (i.e., up to 350 feet depth). However, considering the need for permanent monitoring points in the deeper aquifer zones, we strongly recommend that you consider increasing the diameter of the boreholes for each nested pair, and install two four-inch diameter well casings in each borehole. We would approve the use of four-inch ID, schedule 80 PVC casing for such wells.

6. In order to determine whether the C-zone aquifer has been impacted by perchlorate at each well location, the last depth-discrete groundwater sample should be collected in the C-zone.

A 4-inch diameter PVC monitoring well with a screened interval not to exceed 10-feet should be installed at this depth. Once completed, your C-zone monitoring wells (in conjunction with the MVSL wells) can be utilized to establish the groundwater gradient and flow direction in this area. Selection of the well screen depth and interval of the monitoring well in the B and C-zones must be made in consultation with Board staff. All the well materials should be virgin, decontaminated and factory sealed well materials. All screen and well casings shall be flush-threaded, and a threaded bottom cap must be placed at the base of the well. No glue or solvents shall be used to join pipe sections.

7. Completed wells must be developed using bailing or surging techniques to settle the sand pack and remove fine-grained sediments. The level of the sand pack within the annulus of the borehole will be measured both before and after the development process, and additional sand will be added to the borehole, using a tremie pipe, to bring the sand pack to the design-specified elevations. A tremie pipe will also be used for placement of the well seal materials in the borehole annulus. Following construction of the well seal, the annular grout will be allowed to harden for a minimum of 24 hours prior to final well development. At that time, the well will be developed by pumping and surging with a well-development pump or bailer until visually clear, non-turbid (NTU less than 20) water is discharged from the well, and the temperature, pH, and specific conductivity of the discharge water stabilizes. During the completion of the wells, sand pack will be placed in the borehole annulus from one foot below to three feet above the C-zone well screen. A bentonite seal will be placed and hydrated prior to continuing the placement of the annular seal, using a tremie pipe as described above.

8. Groundwater samples will be submitted to a state-certified testing laboratory for analysis of perchlorate by using USEPA Method 314.0. In addition to testing for perchlorate (using the lowest possible method detection limit), we request that groundwater collected from the permanent monitoring wells be tested for N-nitrosodimethylamine (NDMA) using the USEPA method approved by the California Department of Health Services, with a reporting limit of 2.0 nanograms per liter. Groundwater samples should also be tested for general water chemistry parameters.

9. Please note that certain well records and groundwater information that have been submitted to Board staff by local water agencies is considered privileged and confidential, as allowed by law. As such, some of the information that has been requested by CRA may not be available at this time, and water agency staff may have to be consulted for this information. Board staff believes that, prior to Goodrich initiating their comprehensive groundwater investigation (i.e., after this initial investigation), arrangements could be made to obtain the necessary information from the water agencies whose wells have been impacted by perchlorate. We ask that Goodrich initiate contact with the local water purveyors to obtain this information. Additionally, in conformance to the directive from the Regional Board, Goodrich should initiate a discourse with the water purveyors regarding water supply replacement options.

Please contact Kamron Saremi, Project Engineer, at least seven days in advance of commencing your drilling activities, so that he may arrange to be present at the site. Mr. Saremi's telephone number is (909) 782-4303. Any modifications to this drilling plan is subject to my approval. Based on the results of the initial phase of this investigation, the need for additional investigations, both on-site and off-site, will be evaluated, and you will be notified of additional requirements as soon as possible.

Deadlines

1. A revised work plan including the revisions specified above must be submitted by, and the project must be initiated by, October 15, 2002.

2. All analytical results, groundwater measurements, and field information are to be submitted by fax to Board staff within 24 hours of being generated, throughout all stages of work, and during all phases of the investigation. The office fax number to be used for your data transmittals is (909) 781-6288.

3. The final report for the initial phase of this soil and groundwater investigation, including (at a minimum) the borehole logs, well construction details, groundwater elevation data, and soil and groundwater analytical results, must be submitted to Board staff within 30 days of completing the field work.

Failure to submit the required information by the specified deadline may subject you to administrative civil liability in the amount of up to $1,000 per day pursuant to Section 13268(a) and (b) of the California Water Code.

If you have any questions about this letter, please contact Mr. Saremi at the number listed above, or you may call Ann Sturdivant, Chief of our Spills, Leaks, Investigations and Cleanups Section, at (909) 782-4904.

Sincerely,

Gerard J. Thibeault
Executive Officer

Attachments:
1 – Correspondence between RWQCB and Goodrich Corporation.
2 – Well Location Map, showing perchlorate contamination in municipal water supply wells.
3 – Written summary by Mr. John Kase.
4 – Declaration of August 27, 2002 by Mr. John Kase.
5 – Mailing List.

cc w/out attachments:
Regional Board
Jorge Leon, Office of Chief Counsel, SWRCB
Inland Empire Perchlorate Regulatory Task Force (see mailing list)

cc w/attachments:
Bruce Amig, Goodrich Corporation

`AES/Data/SLIC/Rialto perchlorate 01-02/13267/Goodrich wkplan 13267