Central Valley Regional Water Quality Control Board
6/7/8 April 2011 Board Meeting

Response to Comments

Tentative Cease and Desist Order
for the
Stanislaus County Department of Environmental Resources
Geer Road Class III Landfill
Stanislaus County

The following are Central Valley Regional Water Quality Control Board ("Central Valley Water Board") Prosecution Team responses to comments submitted by interested parties regarding the tentative Cease and Desist Order for the Stanislaus County Department of Environmental Resources ("Discharger") Geer Road Class III Landfill. Public comments regarding the proposed Order were required to be submitted to the Central Valley Water Board by 14 February 2011.

The Central Valley Water Board received timely comments regarding the proposed Order from the following parties:

- Rosemary Sofes, a private citizen
- The California Sportfishing Protection Alliance (CSPA)
- The Stanislaus County Department of Environmental Resources (Discharger)

Background:

The proposed CDO was issued for public comment on 22 November 2010. Public comments were to be received by 30 December, so that the item could be heard at the Board's 4 February 2011 meeting. However, on 14 December, the Prosecution Team was contacted by attorneys from Meyers Nave, who stated that the County was considering hiring them as outside counsel for this matter, and asked for an extension to the public comment period so that the parties could meet to resolve as many issues as possible. The Prosecution Team agreed to extend the public comment period by an additional six weeks, and to move the item to the April Board meeting.

Following issuance of the proposed CDO, the Prosecution Team and members of the Discharger's technical and legal teams have met to discuss various aspects of the CDO. Prosecution Team staff prepared edits to the CDO after each of the two technical meetings, and provided the proposed revisions to the Discharger for its comments. At the request of the Discharger, Prosecution Team staff agreed to a series of depositions over two days, which were conducted by the Discharger's legal team.

The 22 November 2010 version of the CDO required the following:

(a) Evaluate whether the existing landfill gas system is able to provide a constant vacuum (i.e., negative pressure) in each extraction well. If yes, make operational changes to consistently maintain that vacuum. If no, propose an expanded gas extraction system to capture and destroy all landfill gas though out the entire landfill.

(b) Install the enhanced groundwater extraction and treatment system proposed in the Discharger's October 2010 workplan.

(c) Define the lateral and vertical extent of groundwater contamination in both the shallow groundwater zone and the deeper groundwater zone, including the groundwater on the west side of the Tuolumne River.

(d) Complete a site conceptual model and numeric groundwater model to be used to evaluate groundwater remediation strategies.

(e) Evaluate alternatives, and then upgrade the groundwater remediation system to capture the entire plume.

Prosecution staff believes that significant progress was made in the two technical meetings (one focused on landfill gas issues and one focused on plume definition). The parties discussed edits to the CDO to provide more definition, and Prosecution staff provided those edits to the Discharger within a week after each meeting.

Prosecution staff has made revisions and clarifications to the proposed CDO based on discussions with the Discharger and comments received. In general, the revisions have clarified the intent of both the findings and the directives contained in the proposed CDO, the required work has been simplified, and the timelines have been adjusted to reflect the Discharger's procurement limitations. In addition, Prosecution staff is proposing that the Monitoring and Reporting Program of the WDRs be revised based on inadequacies found during subsequent review.

The CDO proposed for adoption requires that the Discharger complete the following:

(a) Define the lateral and vertical extent of contamination in the shallow and deep groundwater zones;

(b) Optimize the current landfill gas extraction system to extract as much gas as possible given the site constraints;

(c) Properly destroy the two groundwater supply wells that provide a conduit between the shallower and deeper groundwater zones. In addition, destroy the damaged groundwater monitoring well and replace it.

(d) Prevent the discharge of contaminants into the Tuolumne River on the south and southwest side of the landfill by installing the enhanced groundwater extraction system described in the Discharger's 2010 workplan.

(e) Comply with an updated Monitoring and Reporting Program that has been revised to include requirements to (1) monitor the Tuolumne River, (2) monitor certain

groundwater monitoring wells on a more frequent schedule to ascertain whether the corrective actions are successful, and (3) submit landfill gas monitoring reports on a semi-annual instead of quarterly basis.

(f) Upon definition of the lateral and vertical extent of contamination, prepare a revised Report of Waste Discharge and possibly an Engineering Feasibility Study to discuss whether additional landfill gas and/or groundwater corrective action measures are needed to comply with the requirements of the WDRs; the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised September 2009 (the "Basin Plan); Title 27 of the California Code of Regulations ("Title 27"); and State Board Resolution 68-16. The Discharger may wish to propose concentration limits greater than background. The EFS shall also evaluate whether additional permanent groundwater monitoring wells need to be installed.

ROSEMARY SOFES COMMENTS

Sofes Comment No. 1: Ms. Sofes lives in the Pinewood Meadows mobile home park immediately east of the Geer Road Landfill. Ms. Sofes states that she has complained to the mobile home park's owners regarding the quality of water provided to residents from on-site water supply wells many times since 1995. Two wells that were less than 1,000 feet from the landfill became contaminated with Freon-12, which could only have come from the landfill. Stanislaus County paid for a replacement well farther upgradient of the landfill, but problems have continued and Ms. Sofes now relies on bottled water for drinking. She states that she has seen water quality test results that show the park's water supply is contaminated with volatile organic compounds (VOCs), dibromochloroprane (DBCP), arsenic, hexavalent chromium, and coliform organisms.

RESPONSE:

The Pinewood Meadows mobile home park is upgradient from the landfill. Monitoring well MW-16S is the closest landfill monitoring well to the mobile home park. It is about 300 feet east of the landfill, and upgradient of both the landfill and the mobile home park. This monitoring well has shown signs of degradation with VOCs that is attributable to landfill gas migration. However, the park's current water supply wells are approximately 1,500 feet east of, and upgradient of, the landfill. These wells were sampled on 2 September 2010, and the analytical results indicate that VOCs associated with the landfill are not present in the park's water supply. The WDRs require that the Discharger continue to sample the mobile home park's water supply wells on a semi-annual basis, as long as the owner grants access.

With regard to the other concerns noted by Ms. Sofes:

- DBCP was used as an agricultural soil fumigant to control nematodes, and its use for this purpose was banned in 1979. Neighboring land uses are predominantly agricultural and are the most likely source of any DBCP in the park's water supply. DBCP is not a contaminant associated with the landfill.

- Arsenic and hexavalent chromium can occur naturally in groundwater, and arsenic in groundwater is very common throughout the Central Valley Region. Hexavalent chromium is less common because is typically oxidized from the more stable and less toxic form (trivalent chromium). There is no evidence that detections of arsenic and hexavalent chromium are associated with the landfill.
- Coliform organisms can be found in groundwater due to nearby septic systems, other wastewater disposal systems, well contamination from coliform that is normally found in soils, and/or improper sampling techniques. Although the landfill reportedly accepted septage prior to its 1992 closure, the landfill is an unlikely source of coliform contamination in the park's water supply because it is downgradient of the supply well.

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS

CSPA Comment No. 1 CSPA believes that the proposed CDO does not address possible pollutant discharges to the Tuolumne River, stating:

> *Based on the facts that the Discharger has polluted groundwater; the landfill is adjacent to the Tuolumne River; groundwater flow is at times toward the Tuolumne River and there is documented hydraulic continuity between groundwater and the Tuolumne River: it is reasonable to assume that pollutants from the landfill in the groundwater would migrate to the Tuolumne River. At a minimum the Regional Board should require that the Discharger assess whether pollutants from the landfill and polluted groundwater are migrating to the Tuolumne River. If pollutants are found migrating to the Tuolumne River a Report of Waste Discharge in accordance with CWC 13376 must be submitted. The study should be conducted during periods when groundwater is shown to be flowing in the direction of the river and when the river is likely to be a gaining stream.*

RESPONSE: The Prosecution Team concurs with this comment. The two monitoring wells within 100 feet of the Tuolumne River are contaminated with landfill constituents, and the Discharger's reports show that the existing groundwater extraction system is inadequate to contain the plume. To date, no monitoring has been conducted to determine whether or not polluted groundwater has entered, or can be detected, in the river. Therefore, the Monitoring and Reporting Program has been revised to require monthly monitoring of the Tuolumne River during the months that the river is expected to be a gaining stream. In addition, the proposed CDO emphasizes the need to install a groundwater extraction system that will prevent further movement of the plume toward the river.

STANISLAUS COUNTY DEPT. OF ENVIRONMENTAL RESOURCES COMMENTS

The Discharger provided extensive comments, including (a) a 16-page cover letter; (b) sworn declarations by an engineer specializing in landfill gas issues, the current technical consultants, and Discharger administrative staff; c) the Discharger's proposed version of the CDO; and (d) depositions of three members of the Prosecution Team. It is noted that some of the comments contain contradictory assertions. In order to consolidate repetitive comments and provide a logical framework for the Prosecution Team's responses, the Discharger's comments have been organized into the following categories:

A. Technical;

B. Schedule;

C. Financial;

D. Policy; and

E. Legal.

A. Comments Regarding Technical Issues

Landfill Gas:

County Comment No. 1 Landfill gas extraction is more effective at addressing VOC contamination than a groundwater extraction and treatment system because VOCs have a stronger affinity for the vapor phase than the dissolved phase, and it is easier and cheaper to move and process gas than water. In addition, unlike groundwater extraction and treatment systems, which treat the groundwater after it is already contaminated, landfill gas systems remove the source of the contamination and prevent the groundwater from becoming contaminated in the first place.

RESPONSE: Prosecution staff agrees that the landfill gas extraction system is an integral component of the remedial strategy at the Geer Road landfill. We also agree that it is more cost-effective to remove contaminants while they are in the gas phase rather than waiting until they migrate into groundwater, and that the majority of the volatile contaminants can be removed through the gas extraction system.

Unfortunately though, this landfill has specific conditions that limit the effectiveness of landfill gas extraction. For example, the Geer Road landfill has been closed with a clay liner on the side slopes and a geomembrane liner on the top deck. The clay soil is more permeable than the geomembrane, which limits the ability of the landfill gas system to maintain a vacuum across the entire site and allows oxygen to be drawn into the waste mass, increasing the possibility of a landfill fire. This landfill does not have a bottom liner, and data shows that at times, groundwater rises into some of the waste, which promotes the generation of more gas

and creates leachate. The landfill gas extraction system is not designed to remove contaminants once they enter the groundwater. Moving VOCs from the aqueous phase (dissolved in leachate or groundwater) to the vapor phase for gas extraction would likely require that air be injected into the groundwater within the gas extraction wells. This technique, called sparging, is not in use at the Geer Road landfill, nor has it been proposed. Additionally, some of the VOCs present in the landfill gas have a relatively low vapor pressure, which means that they are less likely to volatilize sufficiently to be completely captured by vacuum extraction. In summary, while aggressive landfill gas extraction can prevent the majority of groundwater impacts under more ideal conditions, it is not effective in cleaning up groundwater once impacts have occurred, and is not appropriate as the only remedial strategy at this site.

County Comment No. 2 The Discharger's consultant estimates that the current landfill gas system removes approximately 1,800 pounds of VOCs per year. In contrast, an expanded groundwater extraction and treatment system would only remove approximately 21.5 pounds of VOCs per year and would require pumping over 200 million gallons of water per year to do so.

RESPONSE: Prosecution staff does not dispute the fact that the existing landfill gas extraction system is removing a significant amount of VOCs. However, VOCs are still entering the groundwater, causing significant degradation, and migrating an (as yet) undetermined distance below and outward from the landfill. The WDRs require that the Discharger contain the plume at the edge of the landfill, which is the point of compliance defined by the Title 27 regulations. After over 20 years of corrective action, VOCs are still present at significant concentrations in groundwater at, and downgradient of, the point of compliance. Additionally, the Discharger has shown that the current groundwater extraction system is incapable of capturing the plume, and therefore an expanded system is necessary.

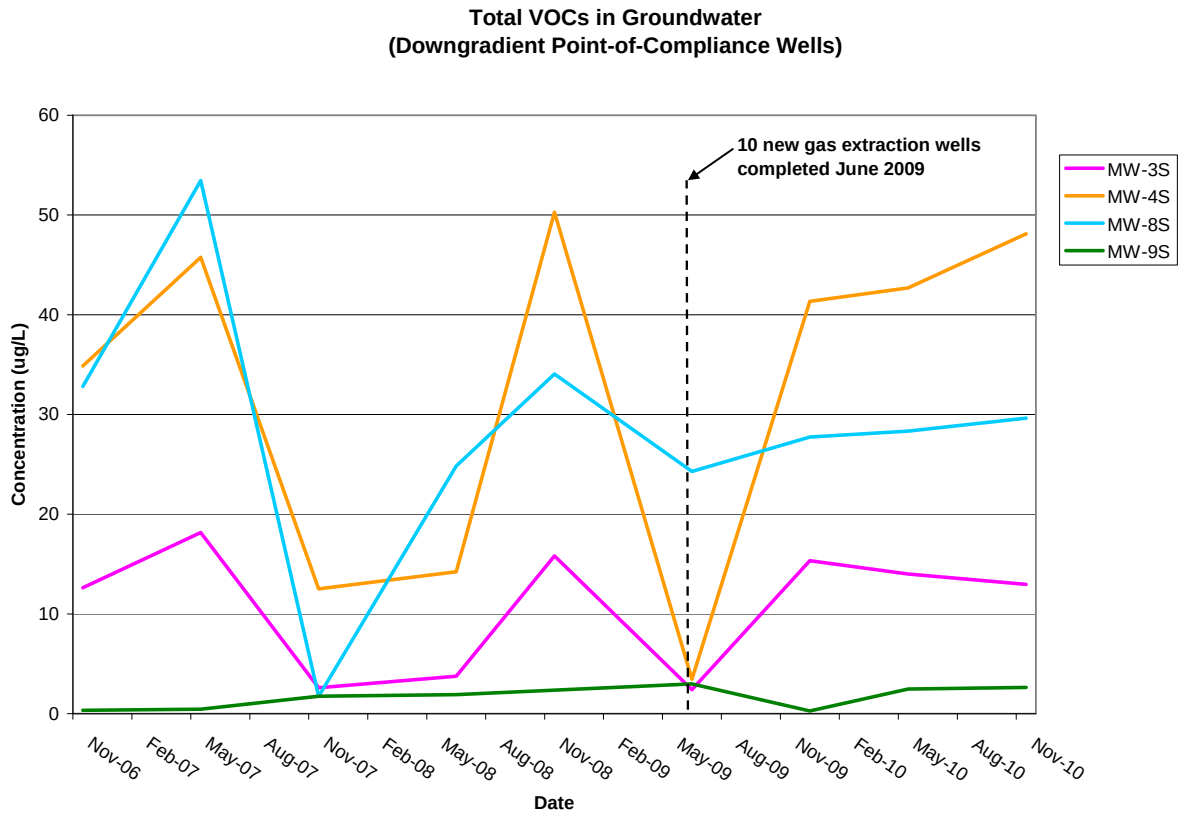
The Discharger’s estimate of 21.5 pounds of VOCs removed via groundwater treatment is based on the inadequacies of the current groundwater extraction and treatment system, and it is not appropriate to extrapolate this result to a system that has been appropriately designed. Staff is unaware of any engineering estimate for the amount of VOCs that the expanded system would remove. Also, it should be noted that the expanded groundwater extraction system would remove VOCs directly from the impacted groundwater, which the landfill gas extraction system cannot do.

County Comment No. 3 The VOC removal data demonstrate that an optimized landfill gas system would be far more effective in addressing VOC contamination than the expanded groundwater extraction and treatment system required by the Draft CDO.

RESPONSE: The Discharger has provided no data or technical analysis to support this assertion. Neither of the Discharger’s consulting firms has provided an engineering analysis

that demonstrates how optimization or expansion of the landfill gas extraction system would address the constituents of concern that are already in groundwater or would be capable of extracting more VOCs in landfill gas. Although the Prosecution Team agrees that landfill gas extraction is an important part of the Discharger's corrective action program, the Discharger's landfill gas specialist states that his firm's "typical design includes landfill gas wells installed 200 feet on-center, or approximately one well per acre of landfill surface." In other words, he concludes that additional gas extraction wells are appropriate at Geer Road landfill based on a rule of thumb, rather than site-specific scientific analysis. This design approach is appropriate for an initial system, but the Discharge has failed to demonstrate that this will be effective in achieving compliance with the WDRs.

The Discharger has previously stated that the landfill gas extraction system should be expanded as a corrective action measure to prevent additional migration of VOCs to groundwater, and at the time, Prosecution staff concurred. In 2009, ten additional gas extraction wells were installed. Technical reports submitted by the Discharger reveal no engineering basis for the number of additional wells or the locations, other than the fact that they were installed at the downgradient edge of the landfill, near the groundwater extraction system. Since the ten new gas extraction wells were installed, monitoring results show that total VOC concentrations in nearby shallow groundwater monitoring wells decreased initially, but then increased, as shown in the graph below.



The Board has a duty to protect the quality of the groundwater, and compliance with the groundwater concentration limits in the WDRs can be readily assessed through routine groundwater monitoring. Although Prosecution staff would welcome additional source-control efforts, it is appropriate to require the Discharger to expend additional resources on groundwater remediation because:

(a) Groundwater quality has not improved as a result of the previous landfill gas expansion and the Discharger has not made any predictions as to when an improvement would be measured;

(b) The Discharger has not demonstrated how or when another landfill gas extraction system expansion will produce measurable results in the groundwater; and

(c) The groundwater plume is uncontrolled and extends at least as far as the Tuolumne River.

The current Monitoring and Reporting Program ("MRP") requires that all of the groundwater monitoring wells be monitored on a semi-annual basis. This monitoring frequency is appropriate when groundwater conditions have stabilized, but is not appropriate when there is either a plume of contaminated groundwater or when monitoring is being conducted to determine whether remedial actions are effective. Therefore, the Prosecution Staff is recommending that the MRP be revised to require that the 14 point-of-compliance and corrective action wells, which monitor both the shallow and deep groundwater zones, be monitored on a quarterly basis. The remaining 20 wells would continue to be monitored semi-annually.

County Comment No. 4

Ms. Wyels agreed that a landfill gas extraction system in theory was an efficient way to prevent VOC impacts in groundwater but that based on her understanding from the Discharger's consultant, SCS Engineers, all of the landfill gas cannot be captured. SCS Engineers, however, never made such a statement. Rather, SCS Engineers believes that landfill gas recovery is an effective remedy for this site, and recommends that remedial strategy. During her deposition, Ms. Wyels did not identify any basis for her belief that landfill gas extraction would not be an appropriate primary remedy for VOCs other than statements and reports from SCS Engineers. Because SCS Engineers has made clear that its statements and reports support a remedy focused on landfill gas, the Regional Board has no basis for its contention that an optimized and expanded landfill gas system could not effectively prevent VOC impacts in groundwater.

RESPONSE: Neither the Discharger nor its consultant has submitted any engineering analysis to show that an expanded landfill gas system will result in groundwater remediation that complies with the WDRs. As stated above, the 2009 landfill gas extraction system expansion has not resulted in improved groundwater water quality.

County Comment No. 5
The current decreasing trend in VOCs levels in groundwater beneath the landfill is primarily a result of the current landfill gas system.

RESPONSE: As noted above, it is clear that the landfill gas extraction system is effective at removing VOCs from the unsaturated zone, which includes the waste itself and any underlying soil above the water table. Every pound of VOCs removed by the gas system is one pound of VOCs that won't be found later in groundwater. It is also true that overall VOC concentrations in groundwater have declined since corrective action was begun 20 years ago. However, it should also be noted that one of the mechanisms responsible for the apparent "cleanup" of groundwater is dispersion (movement of the contaminant plume that was not captured and remediated) to deeper groundwater zones and/or farther downgradient. As discussed above, it is also appropriate to utilize groundwater remediation techniques to clean up this site.

<u>Corrective Action Approach:</u>

County Comment No. 6
The Discharger retained an independent consultant, who developed a remedial strategy for the site that is not only cost-effective, but that is predicted to achieve compliance with applicable water quality regulations. The Discharger proposes to (a) optimize and expand the existing landfill gas extraction system; (b) assess landfill gas production trends in order to properly "tune" the gas extraction wells; (c) determine whether the base of the landfill is partially immersed in groundwater; (d) create a three-dimensional model of the landfill; (e) sample the landfill gas for VOCs in the vicinity of MW-4S; (f) determine whether a more intensive landfill gas system and focused groundwater corrective action system is needed near MW-4S. The Discharger also states elsewhere in the Mayers Nave letter that it will "optimize" the existing groundwater extraction and treatment system.

RESPONSE: The Discharger's proposal falls short in several areas, including failing to define the extent of the plume and not addressing the existing groundwater contamination in the shallow and deep zones. Both of these tasks are required by State regulations and policies, as well as the Discharger's own waste discharge requirements.

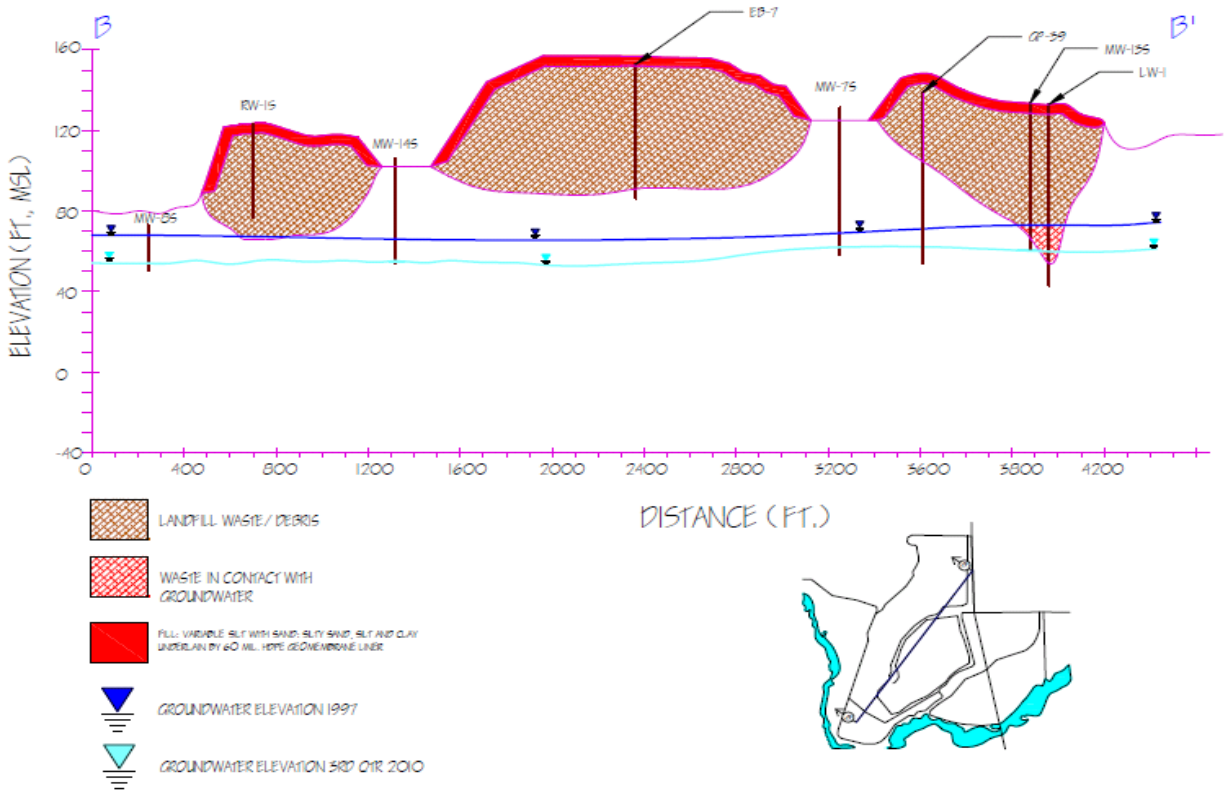
Specific comments on each portion of the proposal are as follows:

a. Prosecution staff and the Discharger agree that the existing landfill gas extraction system should be "optimized". Recent landfill gas monitoring reports show that many of the extraction wells are not operated under a vacuum (negative pressure) and therefore are not pulling landfill gas out of the waste. We understand from discussions with the Discharger's consultants (SCS Engineers) that there may be valid reasons for a positive or neutral pressure at times, but SCS agreed that the system should be evaluated for ways in which to increase the overall negative pressure.

As stated above in the response to Comment 3, the Discharger has not provided any justification that increasing the number of landfill gas extraction wells will result in achieving groundwater water quality objectives at the point-of-compliance wells. The only basis that Prosecution staff could find for an increase in the wells is that the Discharger's landfill gas specialist typically installs one gas extraction well per acre. The specialist was retained after the Draft CDO was issued, and has had only limited time to review this complex case. There appears to have been no engineering evaluation as to whether this approach makes sense at this particular landfill, considering its particular site constraints. The specialist's declaration does not discuss how long it would take to see improvement in groundwater quality or what would happen to the existing groundwater plume if the landfill gas extraction system was expanded.

b. The Discharger proposes to assess landfill gas production trends in order to "tune" the extraction wells. Landfill gas concentrations are already measured as part of the monthly monitoring of the gas extraction system, and it is not clear why the Discharger isn't already "tuning" the wells based on the data that it gathers every month. We recommend that the Discharger complete this task as part of the optimization of the existing system, and then continue each month as the system is monitored.

c. Prosecution Staff believes that sufficient data already exists regarding the extent of waste in contact with groundwater, and the CDO contains specific citations for the technical reports that document this concern. Additionally, the Prosecution Team has developed the following cross section of the landfill based on technical and monitoring reports in the record that illustrates the problem sufficiently for our purposes. Although the Discharger might find it useful for corrective action planning and design purposes to refine this model, Prosecution Staff does not see the need to require it in the CDO.



d. Prosecution Staff agrees that it is appropriate to develop a three-dimensional model of the facility as well as a numeric groundwater model, and the proposed CDO requires it. Prosecution staff was previously informed by SCS Engineers that they were already working on such a model.

e. The last two components of the Discharger's proposal suggest that additional gas characterization in the area surrounding groundwater monitoring well MW-4S would explain the ongoing release of VOCs to shallow groundwater. This monitoring well is on the downgradient, western edge of the landfill, and while it does contain the highest concentrations of vinyl chloride, there are other downgradient monitoring wells that contain higher concentrations of other VOCs, which the Discharger apparently does not propose to address. However, as required by the WDRs, the Discharger must address all constituents of concern that are present at levels above the concentration limits at and downgradient of the point of compliance.

f. Finally, the Discharger also proposes to "optimize" the existing groundwater extraction and treatment system, but has not specified what that would entail. Recent aquifer pumping tests performed by the Discharger's consultants show conclusively that the current groundwater extraction wells do not intercept all polluted groundwater at the point of compliance and are not capable of doing so. Based on the technical reports in the record, there is no evidence to support the claim optimization will result in a

groundwater extraction system that would capture the plume before it leaves the landfill site. If optimization of the existing system would have helped, the Discharger presumably would have proposed that instead of a new groundwater extraction and treatment system. In addition, in 2007, the Discharger upgraded the existing groundwater extraction system including replacing extraction well pumps, air lines, discharge lines, installing more filters, and replacing the granulated activated carbon treatment system. The Discharger has not stated what else it would do as part of the newly-proposed optimization.

County Comment No. 7 The Discharger states that its remedial strategy will reduce constituents of concern below water quality protection standards at the point of compliance and that the inorganic constituents of concern will be adequately addressed by the Discharger's proposed remedial approach.

RESPONSE: The Discharger has not provided any technical analysis that demonstrates that its proposed strategy will result in compliance, nor has the Discharger specified when compliance would be attained. Given the Site constraints and data collected to date, Prosecution staff do not believe that simply expanding the landfill gas collection system will result in compliance. It should also be noted that the CDO only requires that the Discharger construct the groundwater corrective action system improvements that it has previously proposed. As stated in the Discharger's 2009 Engineering Feasibility Study, that approach was determined to be the most cost-effective means of achieving compliance with the WDRs. The Discharger has not submitted any subsequent technical report that says otherwise.

The Discharger's proposed approach neglects to define the extent of the groundwater VOC plume, as required by Title 27, State Water Board Resolution 68-16, and the WDRs. In the shallow groundwater zone, the plume is not defined on the northwest edge of the landfill, and it extends at least as far as the Tuolumne River on the south to western sides. Additionally, groundwater contaminants have been found in the deeper zone, but the extent of these impacts has not been defined. The Discharger's reports state that it is possible that the deep plume may extend under the Tuolumne River. There are numerous domestic wells on the western side of the Tuolumne River, and the Discharger needs to determine if any are impacted by landfill contaminants. Neither the current groundwater corrective action system nor the one required by the proposed CDO is capable of remediating groundwater impacts in the deeper zone.

The Discharger's approach neglects to address the inorganic constituents of concern. The Discharger's independent consultant is mistaken in his analysis of the extent of inorganic impacts (p. 13 of the Declaration of Brian Stirrat). While the monitoring wells he references are on the upgradient side of the landfill, they are impacted by landfill gas, and therefore, it is reasonable to see elevated concentrations of inorganics in those wells.

As stated in the Monitoring and Reporting Program (MRP), the only true background monitoring well at this site is MW-20. Prosecution Staff's review of the Concentration Limits listed in Table VII of the MRP finds probable errors in the units listed for certain inorganics. For example, the highest manganese concentration found in MW-20 is 7.4 ug/l, yet the concentration limit is 11 mg/l, over 1,000 times higher than the background concentration as measured in that well. Likewise, the concentration limits for iron and zinc should have been expressed in ug/l instead of mg/l. Prosecution Staff is not suggesting that the concentration limits be revised at this point, but are simply pointing out that (a) the independent consultant's evaluation is in error, and (b) that inorganics may be more of an issue than previously thought. As described in the proposed CDO, groundwater concentration limits should be re-evaluated after the plume has been defined.

Other Technical Issues

County Comment No. 8 Instead of focusing primarily on removing the source of VOCs in the groundwater by aggressively extracting and burning the landfill gas, the Draft CDO also mandates installation of a new and expensive groundwater extraction and treatment system. An expanded groundwater extraction and treatment system is the most expensive and least efficient option for removing VOCs from the landfill.

RESPONSE: Over 4.5 million tons of industrial, agricultural, septage, inert, municipal and cannery wastes were buried in the landfill, which is unlined. Because some of the waste is at least periodically in contact with shallow groundwater, there are both liquid and vapor phases of contaminants in the landfill. Under current Title 27 regulations, landfills of this type are required to install a protective liner to separate the waste mass from the underlying groundwater and provide at least five feet of separation between the liner and the highest water table elevation. Unlike modern landfills, the Geer Road Landfill has no low-permeability liner to protect the underlying groundwater from landfill gas condensate or other waste liquids that freely drain to the underlying aquifer. Consequently, the only way to prevent groundwater from becoming impacted by constituents of concern is through aggressive corrective action (i.e., landfill cover, groundwater remediation, and landfill gas extraction). The Discharger has initiated these corrective actions. However, as noted above, the landfill cover/liner does not completely encapsulate the waste, and it is evident based on the Discharger's groundwater data that the existing corrective action systems are unable to control and abate the contaminants that are generated by the ongoing degradation of the waste mass.

The Discharger's previous feasibility studies determined that expanding and upgrading the groundwater extraction system was the most cost-effective means of achieving compliance with the WDRs. Despite the claims made in its comments, the Discharger has never submitted any science-based studies that say otherwise. If supplemental off-site groundwater investigations and feasibility analysis show that another form of corrective action

would be more cost-effective, the Discharger may propose that in the Report of Waste Discharge that is required by the CDO.

County Comment No. 9 An expanded groundwater extraction and treatment system would require pumping and treating 200 million gallons of groundwater annually to remove approximately 21.5 pounds of VOCs.

RESPONSE: The Discharger's monitoring reports indicate that a total of 11.4 million gallons of groundwater were extracted and treated in 2010. However, groundwater contamination is still detected at, and downgradient of, the point of compliance, and it is clear that the existing groundwater extraction system is not able to control the offsite release of contaminants. The Discharger contends that installing new wells and expanding the system to remove 200 million gallons of groundwater annually (equivalent to 380 gpm) is unreasonable. However, as noted above, the proposed CDO requires only that the Discharger implement the recommendations included in the 29 October 2010 *Corrective Action Work Plan*, which states:

> *"Based on observed flow rates and drawdown data collected during aquifer testing, it is concluded that a greater extraction rate is feasible than what was imagined in the conceptual model. It is proposed that the flow rate in each of the 13 wells will be approximately 30 gpm (total flow for the system will be 390 gpm). With fewer wells installed, but with greater flow rates, the overall proposed extraction is similar to what was projected in the conceptual model (390 gpm verses 400 gpm). Similarly, the total volume to be extracted is similar to what was projected in the conceptual model (561,600 gallons per day verses 576,000 gallons per day)."*

County Comment No. 10
The Discharger's corrective action measures to date have reduced the constituents of concern, and VOC levels in particular, in the landfill by roughly 90%.

RESPONSE: Prosecution staff acknowledges the corrective action work that has been done and that groundwater impacts have declined significantly since they were first discovered over 25 years ago. However, the basis for this mass removal estimate was not provided and we are not able to corroborate it. Regardless, the fact remains that the current corrective action systems do not and cannot stop the ongoing off-site migration of VOCs and other constituents of concern, and corrective action must be enhanced in order to achieve compliance with the Basin Plan water quality objectives and the site-specific concentration limits established in the WDRs.

County Comment No. 11 Since the mid-1980's when the Discharger first learned that the landfill may be impacting groundwater, the Discharger has been responsive and proactive in

its efforts to address environmental concerns. The Discharger has worked to meet all deadlines in the closure, postclosure, and corrective action programs in the WDRs. Furthermore, the Discharger has implemented many corrective measures before being mandated to do so by the Regional Board.

RESPONSE: Prosecution staff does not seek to impugn the Discharger's intentions or integrity, and the proposed CDO is not a punitive measure. The Discharger has implemented some corrective action measures, but they have not been effective enough to comply with the applicable regulations and policies. The Discharger has not complied with the corrective action enhancements which it proposed in its Report of Waste Discharge and were included in the adopted WDRs Therefore, the Discharger must move forward to address the issues.

B. Comments Regarding the Schedule

County Comment No. 12
The Draft CDO requires eight separate deliverables in the period of eight months. It requires the Discharger to simultaneously optimize the landfill gas system, install a new Groundwater extraction and treatment and conduct a thorough investigation into the lateral and vertical extent of the contamination, both on and off site. This schedule is infeasible.

RESPONSE: The CDO was revised, in part, to address this comment. The number of required submittals has been reduced and the schedule has been extended significantly. In order to meet the schedule, the Discharger will occasionally need to have consultants and working on more than on task at a time, but there are no significant schedule conflicts. Prosecution staff has developed a preliminary schedule based on the proposed CDO, which is presented at the end of this section (after the response to Comment 17).

County Comment No. 13
The schedule of tasks does not allow the Discharger time to comply with its legally-required procurement process for public projects. In the best of circumstances, the public works process takes on average six months from the date the Regional Board approves a workplan. If there are multiple project bids occurring at the same time, more time may be required.

RESPONSE: The CDO was revised to allow six months for procurement of professional services, construction contractors, and major equipment. See the preliminary schedule below.

County Comment No. 14 The schedule of tasks does not allow sufficient time for Board staff to review the Discharger's submittals or for the Discharger to respond to staff's comments. Board staff has historically not provided timely comments.

RESPONSE: There is only one submittal that requires staff's approval before the Discharger can proceed with the work: the *Groundwater Plume Investigation Workplan*. The preliminary schedule below provides nearly two months for staff to review the draft workplan, and another three weeks to review a revised workplan, should it be necessary to address inadequacies in the draft workplan. In addition, the CDO has been revised to allow the Assistant Executive Officer to extend a deadline if "unforeseeable contingencies" create delays.

County Comment No. 15 The schedule of tasks does not account for delays due to permitting or weather. The work required by the CDO may trigger the need for a new or revised permit from the San Joaquin Valley Air Pollution Control District.

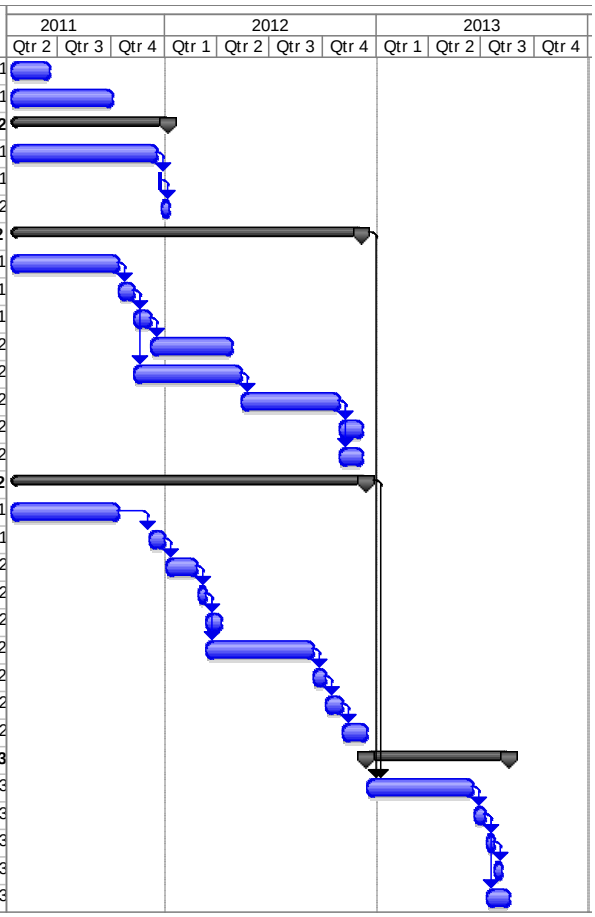
RESPONSE: The proposed CDO allows six months for contractor procurement for each task that requires field investigation or construction. Most projects of this type involve concurrent permitting and procurement, and six months should be enough time to obtain any required permits. The Discharger is only speculating as to the requirement to obtain a revised permit; Prosecution staff does not believe that the current scope of work would require a revised permit from the Air Pollution Control District.

County Comment No. 16 The Discharger does not have the technical resources to comply with the schedule in the draft CDO due to budget shortfalls that have resulted in staff reductions through layoffs and furloughs.

RESPONSE: Prosecution staff understands that many public agencies are struggling with problems due to understaffing, and compliance with the proposed CDO will require ongoing administrative efforts. However, most of the technical work can, and normally would be, performed by consultants. Likewise, the physical work would be performed by contractors.

Preliminary Schedule Based on Proposed CDO

ID	Task Name	Start	Finish
1	**Tuolumne River SAP**	Mon 04/11/11	Wed 06/15/11
2	**LFG Optimization Report**	Mon 04/11/11	Fri 09/30/11
3	**Well Destruction/Replacement Report**	**Mon 04/11/11**	**Fri 01/06/12**
4	Contractor Procurement	Mon 04/11/11	Fri 12/16/11
5	Field Work	Mon 12/19/11	Fri 12/23/11
6	Report Preparation	Mon 12/26/11	Fri 01/06/12
7	**Groundwater Corrective Action System Expansion**	**Mon 04/11/11**	**Thu 12/06/12**
8	Professional Services Procurement	Mon 04/11/11	Tue 10/11/11
9	Final Design	Wed 10/12/11	Tue 11/08/11
10	Report of Waste Discharge (disposal system)	Wed 11/09/11	Tue 12/06/11
11	Permitting	Wed 12/07/11	Tue 04/24/12
12	Contractor and Equipment Procurement	Wed 11/09/11	Thu 05/10/12
13	Construction	Fri 05/11/12	Thu 10/25/12
14	Start-up Testing	Fri 10/26/12	Thu 12/06/12
15	Report Preparation	Fri 10/26/12	Thu 12/06/12
16	**Plume Investigation**	**Mon 04/11/11**	**Wed 12/12/12**
17	Professional Services Procurement	Mon 04/11/11	Tue 10/11/11
18	Workplan Preparation	Mon 12/05/11	Fri 12/30/11
19	RB Staff Review	Mon 01/02/12	Fri 02/24/12
20	Workplan Finalization	Mon 02/27/12	Fri 03/09/12
21	RB Staff Approval	Mon 03/12/12	Fri 04/06/12
22	Contractor Procurement	Mon 03/12/12	Tue 09/11/12
23	Field Work	Wed 09/12/12	Tue 10/02/12
24	Laboratory Analysis	Wed 10/03/12	Wed 10/31/12
25	Report Preparation	Thu 11/01/12	Wed 12/12/12
26	**Report of Waste Discharge**	**Thu 12/13/12**	**Fri 08/16/13**
27	Professional Services Procurement	Thu 12/13/12	Fri 06/14/13
28	Corrective Action Systems Evaluation	Mon 06/17/13	Fri 07/05/13
29	Alternatives Development	Mon 07/08/13	Fri 07/19/13
30	Feasibility Analysis	Mon 07/22/13	Fri 08/02/13
31	Report Preparation	Mon 07/08/13	Fri 08/16/13



C. Comments Regarding Financial Issues

County Comment No. 17 The Discharger believes that the schedule in the draft CDO is unachievable because the Discharger does not have the financial resources to complete the required work within the timeframe required in the Draft CDO. Funds for post-closure activities at the Landfill come from the Geer Road Operating Account and the Post-Closure Maintenance Account, which receives $450,000 in tipping fees each year from the Fink Road Landfill. At the end of the 2010 fiscal year, the total funds set aside for the Landfill in both the Geer Road Operating Fund and the Geer Road Post-Closure Maintenance Account was only $3,423,162. The Discharger has no other funds available for its Landfill obligations. The Discharger's General Fund is facing a current revenue shortfall of $15.6 million, and therefore cannot be looked to as a potential source of funding. Although the County Board of Supervisors has identified tipping fees at the Fink Road Landfill as the source of corrective action financial assurances, the amount of that financial assurance has not been approved by the Regional Board nor has it been allocated by the Board of Supervisors.

RESPONSE: The CDO has been revised significantly, in part to address this comment. According to Discharger's comment letter, cost estimates to comply with the Draft CDO are as follows:

Capital Costs:	
Expansion of the groundwater extraction and treatment system	$1,600,000
Expansion of the landfill gas extraction system	685,000
Plume investigation	435,000
Total Capital Cost	$2,720,000

Based on the following, Prosecution staff believes that the cost of compliance with the proposed CDO is within the Discharger's current means if the Discharger continues to dedicate $450,000 of the Fink Road Landfill tipping fees to fund activities at the Geer Road Landfill each year:

i. The most recent cost estimate submitted by the Discharger (in the October 2010 Corrective Action Workplan) states that the capital cost of expanding the groundwater extraction and treatment system is approximately $1.1 million, which includes a 20% contingency. It is not clear why the cost of this system has suddenly increased to $1.6 million.

ii. The revised CDO does not require expansion of the landfill gas extraction system; it requires only that the system be optimized to the extent practical without significant capital improvements. The Discharger should be able to fund this work through its existing Landfill O&M budget.

iii. As shown in the example schedule presented above, the capital costs will be spread out over three years, and the most costly work (investigation and construction) would take place primarily in 2012 and 2013.

iv. If necessary, the Discharger could seek other forms of financing over the next year or two, or could increase the amount of tipping fees dedicated to Geer Road.

It should also be noted that the Discharger is required to provide financial assurance for postclosure maintenance and reasonably foreseeable corrective action by the Title 27 regulations. The Discharger was required to provide these financial assurances under previous WDRs, but never established financial assurances for corrective action. The current financial assurance mechanism, through which the Discharger currently pays for all postclosure maintenance, monitoring, and corrective action, is a pledge of revenue. The Discharger's current estimate of $583,000 for annual O&M costs is greater than the current pledge of $450,000 per year. Therefore, the proposed CDO requires that Discharger update its cost estimates for post-closure maintenance and corrective action and provide the required financial assurances in the appropriate amounts.

D. Comments Regarding Board Policies

County Comment No. 18
Resolution 92-49 mandates that dischargers be allowed to pursue a phased approach for investigation and remediation, and that they be allowed to select cost-effective remedial methods. The Discharger's proposed remedial strategy achieves these water quality goals and complies with these regulations. The Draft CDO is more aggressive than necessary to achieve water quality goals.

RESPONSE:
The Board has allowed the Discharger to pursue a phased approach for investigation and corrective action for close to 25 years, and has always allowed the Discharger to implement its preferred corrective action measures. However, monitoring data demonstrate that the current corrective action systems are not sufficient to prevent ongoing groundwater degradation or achieve compliance with the Water Quality Protection Standards. There is no evidence that the Discharger's proposed remedial strategy would achieve compliance with those standards. The proposed CDO is aggressive to the extent that it requires the Discharger to fully implement the corrective action measures that the Discharger selected, as documented in the ROWD and formalized in the 2009 WDRs. If the Discharger had complied with the schedule in the WDRs, which it did not contest, much of the work required by the proposed CDO would already be done. The CDO actually gives the Discharger more time than the WDRs allowed.

County Comment No. 19 The CDO would force the Discharger "to implement an expensive and hasty remedial action that is more aggressive than necessary to protect water quality" and that "does not conform to State Water Resources Control Board polices mandating a phased and cost-effective approach."

RESPONSE:
There is nothing hasty about the work that is required by the proposed CDO. Much of the scope of work was proposed by the Discharger in its ROWD and technical reports submitted pursuant to the WDRs. There is no need for further phased investigation of landfill gas—the Discharger's experts acknowledge that the most appropriate and cost-effective thing to do is assess and optimize the current gas extraction system to maximize gas removal. This should not take much time.

With regard to groundwater extraction and treatment at the landfill: the current system cannot capture the known groundwater plume; there is ample reason to believe that there is more plume yet to be discovered; and wells downgradient of the point of compliance (the edge of the landfill) show VOCs at levels that exceed drinking water standards, despite years of

"corrective action". This shows that the Discharger's efforts, however costly, have been much less than is needed to protect water quality.

Finally, although the work required will require significant capital, the proposed CDO does not require the Discharger to implement any corrective action technology that the Discharger has not already evaluated in an Engineering Feasibility Study and selected as the most cost-effective method to address the problems associated with this site.

County Comment No. 20
The Regional Board is required under Section III of Resolution 92-49 to provide the Discharger with the opportunity to select the most cost-effective method for cleaning up the Landfill. The data available to the Discharger clearly indicates that landfill gas extraction is far more cost-efficient than the expanded groundwater extraction and treatment system required by the Draft CDO. The Discharger's consultant estimates that it would cost approximately $26,000 to remove one pound of VOCs using the expanded groundwater extraction and treatment system described in the 2010 corrective action plan, while it costs significantly less to remove one pound of VOCs using a landfill gas system.

RESPONSE:
Prosecution staff agrees that landfill gas extraction is an essential part of corrective action at this site. However, the current uncontrolled groundwater impacts are unacceptable, and they are outside of the physical influence of the gas extraction system. Most of the constituents that are already dissolved in groundwater cannot be removed from it by the gas extraction wells—they only prevent or slow the movement of those constituents from the vapor to the dissolved phase. Unfortunately, given the history of operations and the less-than-ideal landfill cover system that the Discharger selected, it is unlikely that any landfill gas extraction system could fulfill the Discharger's obligation under its WDRs.

County Comment No. 21 The schedule of tasks is inconsistent with Resolution No. 92-49, which mandates that the Discharger be required to conduct investigation and cleanup and abatement in a progressive sequence. The draft CDO requires the Discharger to conduct investigation and install or upgrade two separate remedial systems at once.

RESPONSE: The comment is based on a misinterpretation of the policy. The policy doesn't suggest or require that no remedial action take place before the entire extent of impacts is known. Nor does it suggest or require that impacts to different media (e.g., gas and water) should not be addressed on their own timelines.

County Comment No. 22 The Draft CDO violates the Controllable Factors Policy by requiring the Discharger to obtain hydraulic control of all impacted groundwater by expanding the groundwater extraction and treatment system. Hydraulic control of the plume with

extraction and treatment is not a controllable factor because the volume of groundwater flowing beneath the landfill is so large that it cannot be reasonable controlled.

RESPONSE: The CDO does not require that the Discharger obtain hydraulic control of the plume, the extent of which has not yet been defined. It requires that the Discharger address the known impacts by implementing the previously proposed enhancements to the groundwater remediation system, investigate the plume, and (if appropriate) propose additional corrective action for groundwater impacts. It is premature for the Discharger to figuratively throw up its hands and say that nothing can or should be done when the full extent of the impacts is not even known. After the extent of the problem has been identified, the Discharger will have ample opportunity to propose no further action or other forms of groundwater remediation, as appropriate.

County Comment No. 23
The Discharger and its consultants believe it is critical to allow the remedial strategy to follow the results of further investigations and analyses. The recommended remedy should not be prescribed beforehand.

RESPONSE: The CDO does not prescribe any remedy. It requires only that the Discharger implement the remedy that was previously proposed as the most cost-effective means of addressing groundwater impacts at the landfill site, and which was memorialized as a Provision in the WDRs. The Discharger has never submitted any technical reports that refute the 2009 Engineering Feasibility Study or the 2010 Corrective Action Workplan.

E. <u>Comments Regarding Legal Issues</u>

County Comment No. 24 The Draft CDO impermissibly specifies the manner of compliance in violation of Water Code section 13360 by specifying that the Discharger must achieve compliance by constructing and implementing the expanded groundwater extraction and treatment system described in the Discharger's October 2010 Corrective Action Workplan.

RESPONSE: It is not the intent of the proposed CDO to mandate the manner of compliance with the Discharger's WDRs. The Discharger has an existing obligation to achieve compliance with Title 27 and applicable water quality objectives at the points of compliance designated in its WDRs, and had conducted an exhaustive feasibility study to determine how to achieve compliance. The feasibility study concluded with a recommendation to implement a cost-effective solution that would achieve compliance with the WDRs. However, when it came time to implement that solution, the Discharger balked, and instead re-focused on a means of compliance that, in the evaluation of the Prosecution Team, will fail to achieve compliance. Rather than specify the manner of compliance, the proposed CDO requires the Discharger to implement the very solution that the Discharger had previously proposed.

County Comment No. 25 The Board is estopped from taking enforcement action against the Discharger for alleged failure to submit the corrective action and well installation plans required by Provisions G.1.g and G.1.h of the WDRs because the Board failed to notify the Discharger that staff disagreed with the conclusions in Evaluation of Impacted Groundwater in the North Area Report.

RESPONSE: This comment stems from the fact that the Board's Prosecution Team failed to promptly notify the Discharger that its Evaluation of Impacted Groundwater in the North Area Report ("North Area Evaluation Report") reached the flawed conclusion that the Discharger did not have to follow the WDRs' directive to install an enhanced groundwater extraction system in the North Area of the landfill. The fact that Board staff did not re-affirm the Discharger's existing obligation in the face of an evaluation that concluded that these obligations could be discarded does not give rise to an estoppel bar for future enforcement.

The Prosecution Team interprets the Discharger's comment to refer to the doctrine of equitable estoppel. Equitable estoppel is a doctrine that prevents a party (in this instance the Board's Prosecution Team) from exploiting the other party's good faith reliance on misleading statements. The elements of estoppel are as follows: 1) the entity against which equitable estoppel is to be asserted made false or misleading statements; 2) the party asserting the estoppel defense has reasonably relied upon these statements; 3) the party asserting the estoppel defense is unaware of the true facts; and 4) relying on the misstatement has caused injury. (*City of Goleta v. Super. Court* (2006) 40 Cal.4th 270, 279.)

The Prosecution Team expresses a great deal of skepticism as to whether any of these elements are met, much less all of them. While the Prosecution Team acknowledges that the Board's silence could satisfy the first element if the Board had a duty to speak, it does not believe that such an obligation existed here. Here, the Discharger would have to assert that the Board had an affirmative obligation to object to the Discharger's statement in the North Area Evaluation Report that compliance with the WDRs was unnecessary. Not only is issuance of a NOV a discretionary action, but it would be impossible for the Prosecution Team to excuse compliance with the WDRs through the issuance of an NOV. Likewise, the Prosecution Team does not believe that it was reasonable for the Discharger to rely upon its silence to conclude that it did not need to implement the proposed remedy at the North Area of the landfill: silence, in this case, does not represent acquiescence.

Furthermore, the Discharger would have to prove that it was "unaware of the true facts" in order for the estoppel defense to lie. Here, the "true fact" would be the fact that the Prosecution Team still considered the obligations imposed by the WDRs applicable to the Discharger. Therefore, the Discharger would have to prove that it was under the mistaken impression that it did not have to abide by the terms of its own WDRs by virtue of the Board's silence. Lastly, the Discharger would have to prove that it relied, to its own detriment, on the Board's silence. The Prosecution Team contends that, if anything, the Discharger

experienced a benefit from the fact that it did not implement the well installation at the north area of the landfill by 30 August 2010. Certainly, the resources that should have been expended pursuant to the directive contained in the WDRs were never spent.

In 1999, the estoppel theory raised by Discharger was argued by a petitioner in a case involving the Air Resources Board, where the court stated: "The state's strong public policy in protecting air quality precludes application of estoppel here." (*People ex rel. State Air Resources Bd. v. Wilmshurst* 68 Cal.App.4th 1332, 1347.) Given the immediate corollary between air and water protection, the Board believes that the Court is correct in its statement that it would be poor policy to estop enforcement of the WDRs because the Board's Prosecution Team failed to respond to a statement, buried in the North Area Evaluation Report, that stated that the Discharger did not intend to comply with the WDRs.

County Comment No. 26 There is no reasonable relationship between the burden (including cost) and the benefits of the required investigation and technical reports. Under Water Code section 13267, the Board must insure that the burden bears a reasonable relationship to the benefits.

RESPONSE: The Discharger is incorrect that the proposed CDO imposes a large burden of new investigation and technical reports; most of these reports are already required in the previously-issued WDRs and MRP. The proposed CDO does not impose any significant additional investigation and technical reporting burdens. Rather, the CDO seeks compliance with the Discharger's own WDRs, which include investigation and technical reporting requirements that the Discharger has thus far not fully complied with (including the requirements to fully define the plume, and requirements relating to the installation and implementation of groundwater and landfill gas corrective actions). To the limited extent that new monitoring and reporting requirements are imposed in the proposed CDO, these requirements are in place to ensure compliance with the CDO itself, and impose only a minor burden upon the Discharger.