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Public Comment
Dft. Construction Gen. Permit
Deadline: 6/24/09 by 5:00 p.m.

June 24 2009

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Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1101 I Street, 24th Floor
Sacramento, CA 95814

VIA FACSIMILE: (916) 341-5620
VIA EMAIL: commentletters@waterboards.ca.gov

Malcolm Baldrige National Quality Award 1992 Winner

Re: Comments on the Draft of NPDES General Permit for Discharges of Storm Water Associated with Construction Activities

Dear Ms. Townsend and Board Members:

Graniterock again thanks the Board for listening to our recent hearing presentation and their openness in working with all stakeholders in the development of this permit. We share the Board's goal of protecting water quality, and pride ourselves as a construction company that exhibits not only environmental compliance but environmental excellence. Even in these tough economic times, our Company continues to emphasize the need to be an environment leader and to support programs which result in improvements in construction site storm water management.

We would like to begin by recognizing the efforts of the Board and of the Board staff in implementing improvements to the Draft General Construction Permit (DGCP). The streamlining of the risk-based approach has made the proposed risk assessments easier to understand and implement; we concur wholeheartedly with the Board that the DGCP should regulate sites based on true risk to the environment and we hope that risk assessment will continue to be refined. Additionally, we agree with the Board's decision to use a compliance rain event to determine applicability of the Numeric Action Levels (NALs) and Numeric Effluent Limits (NELs). This is consistent with the recommendations set forth by the Blue Ribbon Panel (BRP)[1] and avoids "punishing" contractors for climatic influences that are simply beyond their control.

While we appreciate the strides the Board and Board staff have made towards creating a construction permit that allows for compliance, we are still concerned that full compliance with the DGCP as it is currently structured is not feasible, simply because it does not scale limits and consider all storm events.
Construction site storm water runoff is not a controlled predictable point source, and there are inherent difficulties in treating it as such. These difficulties extend beyond permitting

[1] Currier, B. et al (the "Blue Ribbon Panel"). 2006. *The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities.*

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compliance and may adversely affect water quality with unnatural discharges to aquatic systems through the lack of discrimination between natural run-on and construction activity runoff and through unnaturally clear water inputs. This is one of many reasons that using a single Numeric Effluent Limit applied indiscriminately to all the various construction sites in all geographic locations throughout the State of California does not make sense. This is especially true when the limit is for a highly variable optical constituent such as turbidity, and when there are ambiguities in benefits obtained by the proposed sampling program. When benefits and goals are separated from known water treatment techniques and cost, scofflaw contractors will tend to win low bid public jobs, and water quality will degrade as they skirt the law.

Considering the magnitude of issues associated with this permit, the 14-day timeline between the issuance of the DCGP errata (in which significant changes were made) and the public comment due date was not conducive to public participation, and unfortunately we feel it has hindered our ability to develop a full analysis of all the issues we are concerned with. However, below we more fully outline some of the issues that we feel will negatively impact our potential for future compliance. We also offer some suggestions for improving the proposed program for storm water quality management, although again we were limited in the scope of our comments by the short timeline.

Numeric Effluent Limits are not appropriate

A. Turbidity Numeric Effluent Limits do not allow for compliance

Graniterock would like to reiterate our concerns about using turbidity to measure sediment loading and as a single numeric effluent limit. While we agree that using numeric action limits in an iterative BMP improvement process is a good approach to improving storm water quality, we find "one-size-fits-all-conditions- and weather" numeric effluent limits that result in violations and fines to be unsupportable. The Blue Ribbon Panel (BRP) came to the same conclusion. They noted that Numeric Effluent Limits are not feasible if a job site does not use chemical treatments and Active Treatment Systems (ATS), and that ATS and chemicals are not appropriate for all jobs. For example, one cannot effectively re-grade a fire ravaged hillside so that all run-on to a project is piped to an ATS; in large storm events runoff from this site would likely "violate" the limit. The proposed concept of a single, inflexible effluent limit simply does not work for all projects at all times, especially when we are dealing with the variable nature of non-point sources such as storm water runoff. The BRP also commented on this:

> Due to the unique nature of storm events and storm water discharges, any numeric limit that is placed in a storm water permit must take into consideration the episodic nature of storm events and be truly representative of storm water discharges. [BRP, pg. 2][2]

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The single numeric effluent limit of 500 NTU does not follow the recommendations presented by the Blue Ribbon Panel and threatens construction contractors on public jobs with non-compliance conditions. As a reminder, it only takes one sample to result in a violation regardless of any potential extenuating circumstances, such as uncontrollable run-on or a high frequency of rain events. In fact, the data used to establish the proposed limit (the Simon et al study and the Regional Board staff data referenced in the DCGP Fact Sheet) had an average turbidity value of 544 NTU. Note that this is already higher than the proposed limit!

Further, the single numeric effluent limit does not consider natural conditions. Some water bodies are naturally more turbid than others, and in fact sensitive ecosystems, including endangered species, thrive in such naturally conditions. Geology and vegetation of a water shed can have significant effect on optical properties of water clarity. For example, in our area there is a wetlands preserve called Elkhorn Slough. Turbidity data from various parts of this relatively undeveloped land show turbidity values can be as high as 2,000 NTU, with a significant amount having values much higher than 500 NTU. Considering the size of slough, about 1,400 acres, and the inherent buffering benefits it receives as a natural, giant settling pond, this variation in turbidity data set should sound alarms when considering compliance with a 500 NTU value. A TSS-turbidity study by the USDA Forest Service, which focused on two watersheds in Northern California, also showed several occurrences of natural turbidity values higher than 500 NTU; please refer to Figure 1. Further, the study notes that "the dynamics and relationships between turbidity and TSS are functions of watershed-specific factors and temporal trends within storms and across seasons." [3]

[3] Lewis, D. et al, USDA Forest Service. 2002. *Turbidity and Total Suspended Solid Concentration Dynamics in Streamflow from California Oak Woodland Watersheds*

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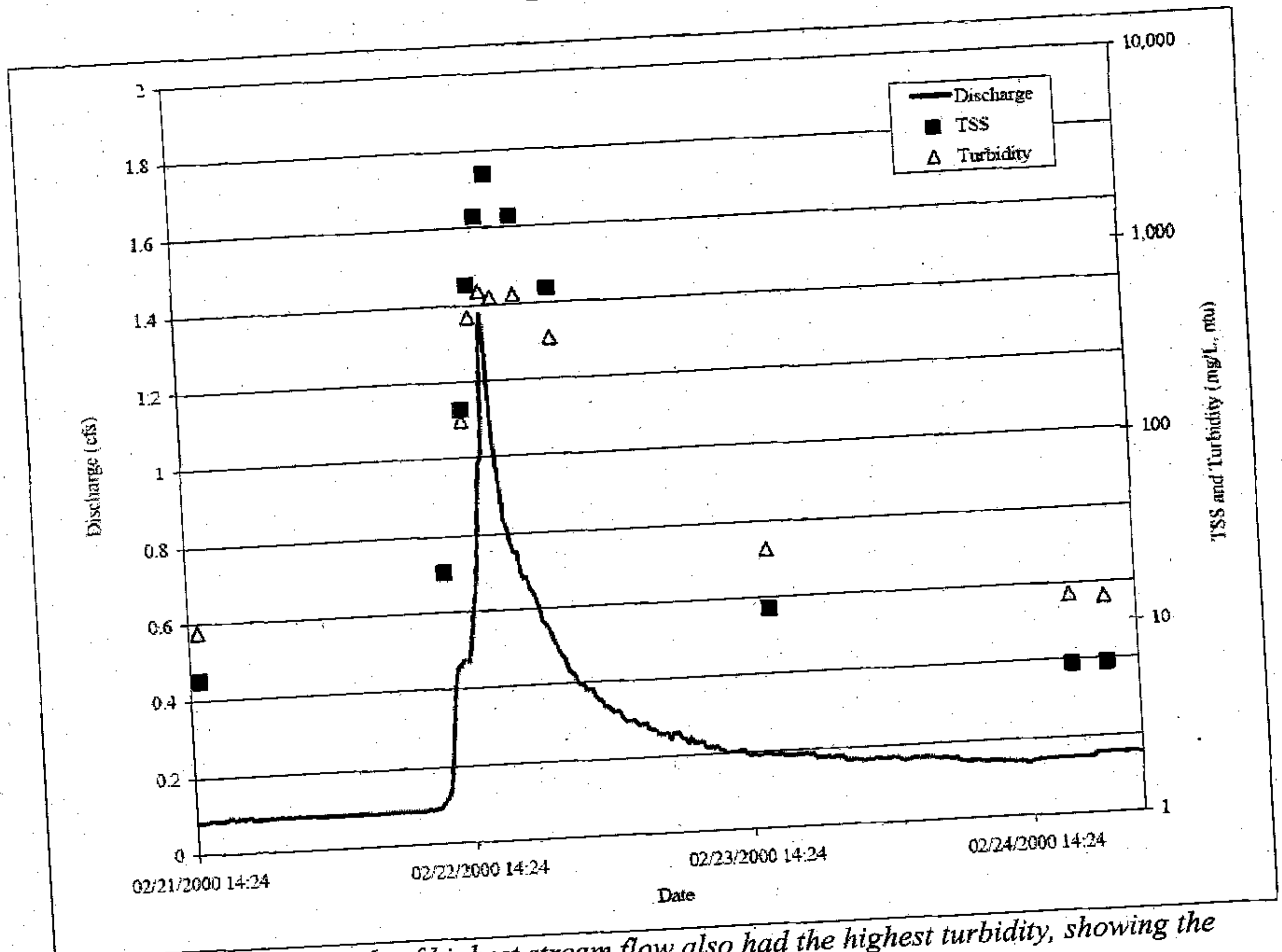
FIGURE 1



In this study, the periods of highest stream flow also had the highest turbidity, showing the temporal, event-specific fluctuations that can occur in nature.

Again, the Blue Ribbon Panel has the same recommendation to include background conditions when quantifying water quality:

> The Board should set different Action Levels that consider the site's climate region, soil condition, and slopes, and natural background conditions (e.g. vegetative cover) as appropriate and as data is available. With active treatment systems, discharge quality is relatively independent of these conditions. In fact, active treatment systems could result in turbidity and TSS levels well below natural levels, which can also be a problem for receiving waters. [BRP pg 17][4]

[4] Currier, B. et al (the "Blue Ribbon Panel"). 2006. *The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities.*

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Some natural water bodies depend on high turbidity for its ecosystem, and requiring a single, numeric level of turbidity to be discharged into all the water bodies in the State of California could actually impair ecosystems that depend on naturally turbid waters.

It is not protective of water quality to have a single numeric effluent limit that ignores the existing environmental conditions and natural habitat and that does not allow for project site flexibility. Rather, an action level that is based on background water quality and actual environmental impacts would be the best approach.

B. Turbidity does not measure sediment loading

We understand the Board's primary goal is to reduce sediment loading in storm water runoff. Graniterock shares the goal of having healthy natural levels of sediment transport in waters of the state and reducing excessive sediment loading that can damage our waterways. But to be effective we must use the right tools. The use of turbidity to measure sediment in runoff is not scientifically sound and can lead to ineffective policy and infeasible compliance requirements.

To put it succinctly, sometimes turbidity tracks sediment and sometimes it does not; one-size-fits-all limits ignore this fact. Please see Figure 2, extracted from the previously referenced USDA Forest Service report, for a diagram of the complicated TSS-Turbidity relationship; note that this study was only for the referenced sites.

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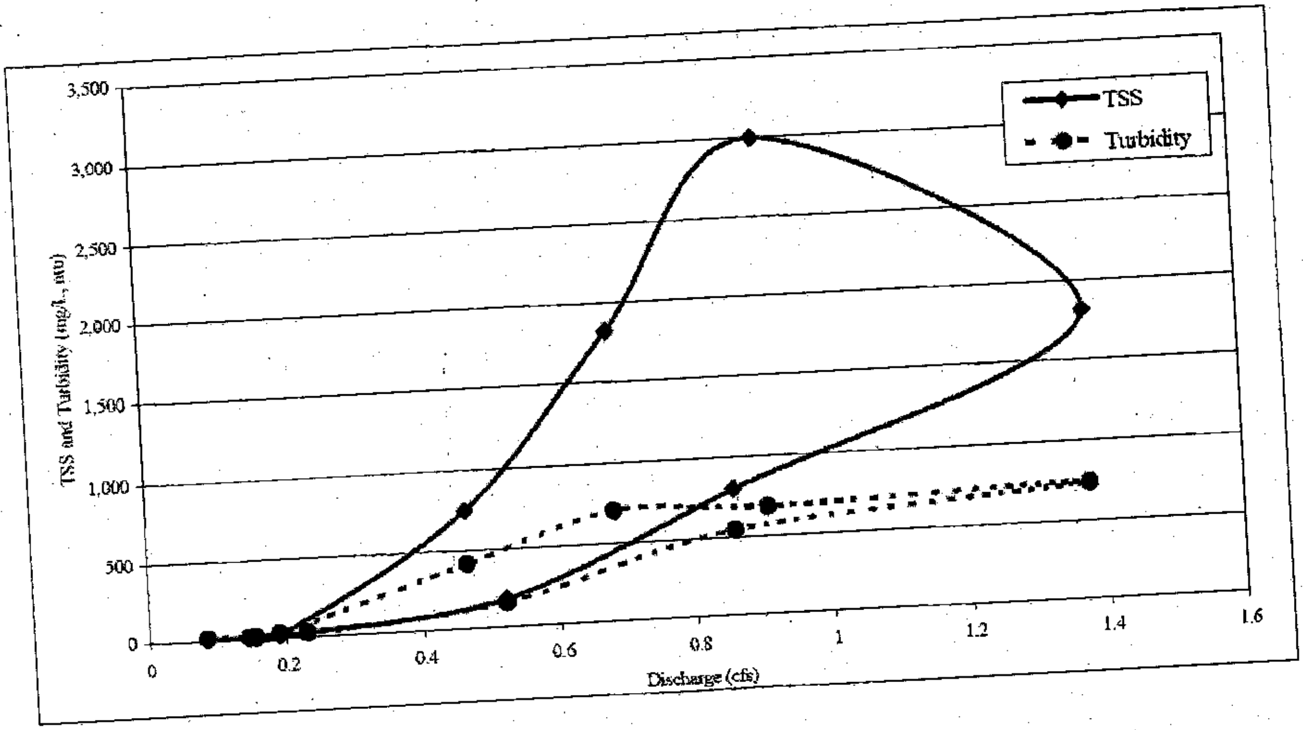
FIGURE 2



The numeric effluent limit relies on using turbidity to assess sediment levels when there is no clear, scientific, repeatable relationship between the two. The permit uses a relationship of 1:3. Total Suspended Solids (TSS) to turbidity, to calculate the proposed single numeric effluent limit of 500 NTU, but this was based only on three specific sites monitored at distinct (but unspecified) time frames.

Graniterock has conducted limited research into turbidity and sediment levels, and all supporting scientific literature that we have reviewed shows that sediment-turbidity relations can vary significantly based on site geology, slopes, vegetation, and rain event specific parameters. For example, the USDA Forest study referenced was unable to establish a single TSS-turbidity relationship for the watersheds just within their study boundaries; it would be impossible to establish a relationship that would work for all types of watersheds.

This means the 1:3 TSS-turbidity relationship used to establish the numeric effluent limit is not reproducible for sites outside of those used in the study and it would be erroneous to broadly apply it to all the different hydro-geologic conditions throughout California. It should not be the basis for measuring water quality impacts and triggering violations. While it may not seem to be a big deal to have a single numeric effluent limit that is not achievable for all construction sites at all times, we are concerned that violations and penalties can be issued even under exceptional circumstances, with no demonstrated benefit to water quality.

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Up to now, regulatory and enforcement decisions have not relied on turbidity; instead, regulators and courts favor more reproducible and scientifically accepted measurements of sediment concentrations to assess potential impacts to water quality. Some examples of measures of sediment loading include Total Suspended Solids (TSS) and Suspended Solid Concentration (SSC). In contrast, turbidity is an optically determined parameter that measures how much light can pass through a test sample of water. **There is no mass measurement in turbidity and no measurement of organic or inorganic matter**. Turbidity simply measures the optical properties of particles, such as its reflectiveness; its values and can be independent of particle quantity, density, and color. It can also include natural elements like algae, chlorophyll, and anything that affects optical interactions disproportionate to the particle size. In addition, turbidity is greatly influenced by location and temporal parameters and can have drastically fluctuating values throughout a single rain event.

Standard erosion control materials have generally been developed and engineered to control sediment, not turbidity. It is untested if the single numeric turbidity effluent limit proposed in the permit can be met with BMPs that have been designed and field tested to control erosion and sediment. Because of the complicated relationship between sediment load and turbidity, we cannot simply say that by controlling sediment we are controlling turbidity. Although it might be a good indicator to trigger BMP maintenance when used as a Numeric Action Level, the Draft permit nullifies this benefit by additionally using Numeric Effluent Limits with violations attached. Simple models do not work when describing complex storm water events, especially when there are automatic penalties involved.

A single numeric effluent limit based on turbidity with the potential for violations and fines is not appropriate at this time. We are not opposed to using turbidity as an indicator of BMP effectiveness and believe using the numeric action levels to assess site erosion controls can be beneficial to improving water quality. However, having penalties and violations issued for this untested new approach towards water quality will at the minimum result in confusion and litigation, and not result in improved storm water management that betters water quality.

C. Single, numeric effluent limit for pH is not appropriate

The use of a pH numeric effluent limit is not appropriate because it does not consider natural conditions. Potential natural inputs of pH that could affect the levels in the storm water discharge, such as naturally alkaline or acidic springs and vegetative matting. A stand-alone numeric limit also does not factor in pre-existing conditions that may be beyond the control of the contractor. For example, nutrient poor soils can have heavily acidic pH. Natural conditions such as mineralogy, climate and weathering can also influence the natural pH in a watershed beyond the control of the contractor, especially where there are indivertible run-on conditions. While a contractor can use BMPs such as good housekeeping and source control to manage construction sources of pH, we cannot control for all natural inputs and upstream influences. The "one-size fits all" pH numeric limit currently proposed does not allow for consideration of pre-existing or uncontrollable conditions, which could set up certain sites for

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non-compliance. Instead, the DCGP should rely on the action level framework to target efforts

Sampling concerns

A. Benefits of collecting 3 samples per day are not clear

Based on the recently issued errata, the requirement to collect a grab sample at the start of discharge, at the start of the day, and at the end of the day appears to have been stricken. From our conversations with Board Staff, it appears that it has been changed to require 3 samples at unspecified time periods. Graniterock has not seen a draft of the proposed permit language that addresses this change, so we will limit our discussion to our understanding of the general concept proposed.

It is our understanding that the original requirement to collect a sample at the beginning of discharge, the beginning of the day, and at the end of the day (three samples) was to obtain a daily average over time so that the true impact of the discharge from the site would be more accurately represented. While we applaud the concept of using a daily average, which would better describe the discharge through time, and firmly believe that samples need to be representative, we are concerned that it may be difficult or impossible to collect samples at the required time periods due to the uncertainties of weather. Because there is no accurate method of predicting or controlling the length of a storm event, job sites seeking to comply with the three sample provision may be forced to collect three samples in immediate succession at the start of the discharge to hedge against the possibility that the storm duration or severity will not present the opportunity to comply with the rule later in the day. This type of sampling will not be representative of the site's true impact to water quality. While we trust regulators would apply a rule of reason in this situation, there are, unfortunately, opportunistic parties eager to file suit against any discharger unlucky enough to miss the timing of three sample set because it stopped raining. These opportunists would no doubt characterize the discharger's inability to comply with the three sample rule, or resulting inaccurate sample results, as a violation of law, rather than a failure to predict the weather.

The point of averaging samples is to characterize the site's discharge, and by having samples all collected in a row does not characterize a discharge. Taking three samples in a row is a sampling quality control solution by possibly minimizing variations over time, but do not form a better representative sample of a discharge event.

Taking three samples at the start of a rain event discharge would also skew the data set high and make it appear that the construction site discharge is more turbid (interpreted by some as polluting) than it actually is. The Caltrans first flush study concluded that particulates, turbidity and various other water quality parameters are significantly higher in the initial "flush" of rain but that these elevated concentrations are not sustained throughout the rain event. For example, particles discharge 35.76% of their total volume in the first 20% of runoff, and 27.16% of the total turbidity is seen in the first 20% of discharge. Please refer to

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Attachment F for calculations. With the data in the Caltrans first flush study it is hard to understand how a numeric effluent limit can be used for any and all jobsites. The California DOT First Flush Phenomenon Study revealed that there is:

> a large change in the concentration of most contaminants as a storm progresses... The reduction (in pollutant load) occurs because the pollutant mass may be washed out of the site, or may be diluted by higher runoff flow rate as the storm progresses.[5]

The First Flush Phenomenon Characterization tells us that initial storm water samples would have significantly higher turbidity values. This means collecting three samples at the start of the rain event, when the job site can be assured of obtaining all required samples, would make it appear as if the site were discharging more pollutants than it actually is over the course of the rain event.

This problem with the proposed sampling methodology is compounded by the DCGP's requirement to have a single numeric effluent limit for turbidity. As discussed earlier, turbidity values can fluctuate significantly over time and rain event intensity, and collecting three samples in a row will not capture these natural fluctuations. The alternative to collecting three samples in a row is to rely on the weather report's predictions for storm duration, and if violations and monetary penalties are involved the consequences of a faulty prediction could be grave.

Graniterock believes that the best solution is to remove the numeric effluent limit for turbidity until these substantive sampling issues can be field tested and solved for a variety of sites throughout California.

B. Impacts of run-on need to be considered

Currently the DCGP allows for the discharger to conduct a construction site and run-on evaluation if there are pH or Turbidity NAL exceedances. We find the issue of run-on to be very important to achieving water quality standards, and request that the CDGP also allow a site and run-on evaluation and exemption for NEL exceedances if NELs are to remain in the permit.

Managing run-on is of particular concern in the road and public infrastructure industry, as many sites experience direct, uncontrollable run-on from surrounding hills or residential areas. In some instances, diversion pathways or treatment units are simply not feasible. For example, some jobs are abutted by hills bared by summertime fires, and experience sheet flows of mud that overwhelm BMPs placed there, even if active treatment systems (ATSs) are used. As another example, some highway projects have the site cut through the mountains, and engineering runoff diversion pathways when there is a 12% grade mountain next to the

5 Stenstrom et al. 2006, *First Flush Phenomenon Charecterization*, p.60

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site is practically impossible. Even if an ATS is employed, additional grading would be necessary to direct the runoff to the system, which may be impossible in sensitive habitats and other unique areas. The cost of treating run-on has not been considered, and poses to be one of the highest costs on many projects.

These naturally occurring erosion problems can't be handled by something as easy as diverting the flow and, in heavy rains, would likely overwhelm the contractor's best attempts at treatment control. Additionally, many freeway projects are adjacent and/or downstream from residential back yards in which fertilizers and other chemicals with the potential to alter pH are used, outside of the contractor's control. Again, creating diversion pathways down the highway median for many miles is not feasible, and may actually create downstream erosion problems once the water leaves the project boundaries.

We are concerned that we would be unable to comply with the permit's numeric standards when faced with these situations, and request that background and run-on conditions be considered when assessing compliance. If an NEL is to remain in place, there should be an exemption for run-off if background levels or run-on levels already fail to meet the NEL standard.

C. Clarification of bioassessment requirements

While the DCGP proposes to require bioassessment sampling of receiving waters under certain situations, we are unable to find a corresponding use for this data, i.e. there is no clear goal against which this data will be compared. It is not apparent the rationale for requiring bioassessments, as the main goal of the DCGP is to minimize the effects of erosion and sediment. Further, typical construction sites do not use chemicals in which toxicity is a concern, unless Active Treatment Systems (ATSs) are in play.

We understand that the Blue Ribbon Panel recommended bioassessments, but that was only in the context of sites that use (ATSs) where polymers and coagulents are used. Bioassessment has not been conducted as a regular part of storm water management on construction sites, and we fail to see why it should be required outside of ATS use if the goal and benefit assessment of the DCGP is sediment reductions. Graniterock requests that the bioassessment requirement be removed or modified to:

1. Be a requirement only if chemical treatments are used as part of an ATS direct discharge into a water body listed as impaired for sediment.

1) Clarify who would be required to conduct bioassessment
2) Clarify bioassessment guidelines. The guidelines provided in Appendix 5 do not provide sufficient details, and some key referenced information (such as *when* to conduct bioassessment sampling) is not available to the public due to broken website links.
3) Define wadeable.
4) Clarify the definition of "tributary"

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5) Limit this requirement for a direct discharge only

The way that the DCGP is currently written, a project that "may" discharge surface runoff to a freshwater "wadeable" stream that is listed as impaired due to sediment, is a tributary to any downstream water body that is listed as impaired for sediment; or has the beneficial use of spawn, cold and migratory. The term "wadeable" is not defined in the permit, and we fear that such a subjective descriptor could result in ephemeral streams or ditches with barely a trickle of water being roped into needing bioassessment. Also, it is unclear how to assess if a project "may" discharge; for example, if a project site is directly adjacent from the stream but the contractor implements diversionary BMPs to eliminate potential discharge, would that alleviate the bioassessment requirement?

Additionally, the DCGP does not explicitly define the limits of what would constitute a tributary. For example, if a project site is adjacent to a small creek that feeds into a small river that eventually feeds a large river that is listed as impaired for sediment, would that small creek be required to have bioassessments testing conducted? This could lead to a large number of sites throughout California having to collect samples from rivers and streams that do not actually have direct impacts on the water body of concern, leading to confusion, useless data and wasted resources. Additionally, if there is a tributary involved it is unclear whether the bioassessment is required of the tributary water body or of the impaired water body, which could be very far away from the project boundaries. In our conversations with Board Staff, it appears that the intent is to have only direct tributaries sampled, and that sampling should occur in the water body on site. However this should be made explicit in the DCGP.

Finally, the bioassessment sampling requirement should be for a direct discharge into a water body that meets the definitions noted above and that is within the project boundaries. For example, a highway site could discharge into a storm drain that is part of a storm system that eventually discharges into a listed water body or a tributary of a listed water body many miles away. In this instance, bioassessment monitoring would be extremely difficult (if not impossible) and would not be an adequate assessment of the project's impacts. If the water body of interest lies outside of the project boundary, other dischargers could be inputting into the water system and any assessment completed would not be representative of the site's impact on the environment. Also, it would be nearly impossible to establish the point of discharge from which to collect representative upstream and downstream samples.

Without clarification about the goal of the bioassessment sampling and the methods and programs for conducting the sampling, Graniterock does not see it as a viable requirement for inclusion in the DCGP. If this requirement were to remain, significant additional clarification and information will need to be established.

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D. Clarification Receiving Water Sampling Requirement

The DCGP requires that Risk Level 3 dischargers sample receiving waters for the duration of the permit coverage. However it should be made clear that receiving water sampling is required when there is a direct discharge into a receiving water body. As described above, there can be circumstances where a job site discharges into a storm water system that could eventually reach the receiving water body, and it is not feasible or scientifically representative to collect receiving water body samples many miles away from the project boundaries.

E. Sampling at night is not safe

Graniterock requests clarification for when sampling and visual observations need to be conducted. Currently the permit states that dischargers shall conduct visual observations, inspections and sampling during business hours only. There is no allowance for business operations that occur at night, as many highway and infrastructure projects start at night to minimize impacts to the general public. However, there is such an allowance for non-storm water observations, which are only required during daylight hours (sunrise to sunset).

A similar clause should be put in place for the storm water discharge inspection and collection, since observations may not be accurately completed in the dark. Further, there are significant safety issues. Most of our projects are on public highways and roads, and it would be extremely unsafe to attempt visual observations or sample collections at night around highways.

Finally, normal operations should be better defined to explicitly exclude non-construction or non-soil disturbing activities, i.e. paperwork, meetings, maintenance, etc. There are times when administrative staff is working or planning meetings are held at a site, but the actual construction activities that could potentially generate pollution are not occurring. In these situations, sampling would be of no benefit and would instead be an unnecessary drain on resources.

F. Requirements to assess authorized non-storm water discharges is unclear

The DCGP currently recognizes that there are authorized non-storm water discharges that may occur on project sites, such as discharges from potable water sources for irrigation and water used for dust control. However, the DCGP also requires that these discharges be monitored, must meet the applicable NALs and NELs; and that sampling information must be reported in the Annual Report.

It may not always be feasible to collect samples and monitor these non-storm water discharges. For example, water used for irrigation or dust control is typically not a full flow but is a seep or a moist spot. It is unclear how to collect the requested information and what the expected monitoring frequency is. One potential option would be to sample the source of

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the irrigation or dust control water, but there are difficulties with that as well. For example, will the contractor need to collect a sample from the irrigation system each time it is turned on? What if the project job wishes to use recycled water or collected storm water? What if the source of water is inaccessible? The intent of authorizing non-storm water discharges is to establish a category of discharges that pose no harm to the environment, and requiring a sampling and monitoring program for water already considered harmless would be a drain on resources, including time, without any benefit to water quality. Graniterock requests that the requirement to sample authorized non-storm water discharges be removed.

G. Clarification of compliance storm event

Graniterock believes the Board's goal to establish a compliance storm event (that is, a storm event outside of the norm and beyond which compliance assessment is not done) is important in assuring real-life project sites can comply with the permit requirements. We would like a couple of clarifications. For example, the compliance storm event for the Risk 3 level dischargers is a 5-year, 24-hour storm event yet the compliance storm event for ATS discharges is the 10-year 24-hour event. Graniterock requests that the ATS compliance storm event be changed to match the Risk Level 3 discharger's compliance storm event, that is, a 5-year, 24-hour storm event.

Further, it is unclear whether the compliance storm event would apply to NAL exceedances at the Risk Level 2 and Risk Level 3 tiers. Graniterock recommends including the NAL in the compliance storm event exemption as the same issues that necessitate a compliance storm event for an NEL also apply for an NAL. While a compliance storm event is good start in simplifying a complex system, it will not resolve the earlier expressed concerns with the NELs as they are written (for example, it is unclear how turbidity behaves over time and event duration).

Hydromodification/water balance is not appropriate for this permit

While Graniterock recognizes that hydro-modification is an issue that should be addressed, we do not believe the construction general permit is the appropriate arena for these discussions. As a general contractor that frequently works with public agencies such as cities and counties, our role is to construct already designed roads and highways. We have minimal, if any, input during the designs.

Because of our inability to modify most pre and post construction designs, it is not feasible for us to comply with hydro-modification requirements; these requirements should be directed at project designers, not contractors. MS4 permits are the most appropriate place for hydromodification permits because they allow local expertise to determine site specific hydromodification requirements. Graniterock recommends that the hydro-modification requirement be removed from the construction general permit and that the Board instead work

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with regional planning departments to ensure that hydro-modification issues are properly considered.

Active Treatment Systems (ATS)

A. Numeric limit for ATS should be based on background levels

As with the previously discussed NELs for turbidity and pH , Graniterock is opposed to the use of a broadly applied, single numeric limit for turbidity for discharges from an ATS unit that would determine compliance in all environmental settings and for all storm events. While ATS units can reduce turbidity levels significantly, there is a high likelihood that these units will depress turbidity levels well below natural levels and cause harm to an aquatic ecosystem. Harm caused by discharges of scouring water (also known as "hungry water") may be considered a significant impact under CEQA. This concern was included in the Blue Ribbon Panel's recommendations:

> The Board should set different Action Levels that consider the site's climate region, soil condition, and slopes, and natural background conditions (e.g. vegetative cover) as appropriate and as data is available. With active treatment systems, discharge quality is relatively independent of these conditions. In fact, active treatment systems could result in turbidity and TSS levels well below natural levels, which can also be a problem for receiving waters. [BRP, pg 17][6]

The Fact Sheet notes that the ATS NEL is based on the Blue Ribbon Panel's report, however the DCGP does not appear to have incorporated the Panel's concerns. Graniterock recommends that the Board base ATS action levels on existing background conditions instead of the unnaturally low level of 10 NTU, and require performance standards to be sensitive to the receiving water.

B. ATS polymer use is risky

Another issue that we are concerned with is the use of polymers in ATS units. If not used properly polymers and flocculents could kill fish and cause significant detriment to the ecosystem. We're concerned that our sites could trigger CEQA if we're adding chemicals to a sensitive habitat, or discharging to a stream in which there are endangered species.

The ATS discharge limits are so low that the risk of high use of polymer in order to reach such levels could be high. Additionally, ATS units have not been broadly used in construction sites and there is little field analysis of its benefits for varying types of project. Currently ATS units have been used at larger projects, but its benefits and effectiveness at the small and

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medium sized job sites are as yet untested or very limited tested. Graniterock asks the Board be more cautious in its encouragement of ATS use until more field assessments are done.

Training requirements

Graniterock applauds the Board's inclusion of an experience allowance for individuals to meet the Qualified SWPPP Developer (QSD) and Qualified SWPPP Preparer (QSP). Many of the people in our construction crew have solid expertise in BMP management and in storm water quality management based on years of experience, but they may not be the types who are able to go through complicated application processes and examinations. It is our firm belief that the person in the field and working the site is in the best position to make reactive and pro-active improvements to the site's storm water management program the quickest. The training requirements considered for the DCGP are still unpublished to the public, and Graniterock hopes that the Board factor in options for hands-on and field learning when these requirements are finally issued to the public.

Further, we request a small modification in the definitions of QSD and QSP. DCGP currently notes those with 5 years or more experience of preparing the SWPPP are considered qualified, and Graniterock requests that this be expanded to include experience not just in writing the SWPPP but also in implementing the SWPPP and in managing pollution control and storm water programs.

Impact to mines and other facilities currently regulated by the Industrial Storm Water Permit

Another concern that Graniterock has is the potential overlap in permit structures for facilties currently mines. As written the permit includes activities such as "clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance." A mining operation fits this definition, however active and inactive mines are specifically regulated under the existing General Storm Water Permit for Industrial Activities.

Mining activities should not be subjected to the construction permit, as this will lead to confusion over which permit actually applies and takes precedence. In addition, mining activities are more suitable for coverage under the industrial general permit because the stationary nature of these operations allows for source and treatment controls that are different in nature and scope than those used by construction sites. Graniterock requests that the list of those excluded from the DCGP to be expanded to include any facility that operates under the general industrial storm water permit to be exempt from this permit structure.

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Sampling Data Submittal Extension

The DCGP currently requires data submittal 5 days after the end of the storm event however this may not be a fast enough turn around time. Faster turn around times may be requested at a significantly higher cost (often double the normal cost) without any benefit from the speed. Further, based on our experience with labs they sometimes still submit a report late even when a short time frame is requested. Further, when results are received Graniterock takes the opportunity to review the results and the site conditions, and make BMP improvements as needed. This iterative improvement cycle takes longer than 5 days, and any improvements made as a result of the storm water samples should be submitted at the same time as the sample results. Graniterock recommends modifying the data submittal timeline requirement so that data may be submitted up to 14 working days after the results are returned from the lab.

RUSLE Equation should be seasonal to account for actual erosion risks

We reiterate our support of the Board's risk-based approach to storm water management, and we feel that the RUSLE equation, if used appropriately, could be a useful tool to assess risk.

However, under the current permit structure the RUSLE equation calculates risk factors based on erosion values for the entirety of a job, including the dry season, and not just for when erosion is actually occurring (that is, the rainy season). This means the RUSLE equation inaccurately over-states the real environmental risks posed by a multi-year job site. This is especially problematic for the road construction industry because projects typically span several years with the majority of the work done during the summer months, to accommodate construction and traffic flow. In the current scenario, the RUSLE equation assumes there is runoff for the entire project duration (sometimes multi-years), even during the dry season.

As an example, we calculated a soil loss value for a 2.5-year job in a flat area of Santa Cruz using L, S and K values from Figure 1 in the Fact Sheet and an R value from the EPA rainfall Erosivity Calculator. This theoretical project ends up with a calculated 405 tons/acre erosivity value for the entire project life; please refer to Attachment A for actual calculations.

If we break down the 405 tons/acre value into annual dry season versus rainy season values, we would see about 48 tons/acre of erosion during the non-rainy season each year and a wet season erosivity value of 110 tons per acre each year. Using this model, a single 10-acre construction job would cause about 480 tons of soil to be eroded each the summer. Additionally, this model would have the Santa Cruz Mountains eroded into non-existence in 22,839 years (although the mountains have been around for 3-5 million years). Please refer to Attachment C for the actual calculations.

If we backward engineer the same Santa Cruz job using the RUSLE equation to calculate risk on a seasonal basis, we would see a maximum winter erosivity value of 103.1 tons/acre (high sediment risk). In the spring and fall the jobsite would fall into the medium sediment risk and

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in the summer season the job would be in the low sediment risk. Please refer to Attachment B for the calculations used to determine the risk levels.

As another example, when we backward engineering a three year job in Castroville using L, S and K values from Figure 1 in the Fact Sheet and an R value from the EPA rainfall Erosivity Calculator, we found that the job would have a 128.5 tons/acre erosivity value. The entire job would be considered high sediment risk; please refer to Attachment D for calculations. Alternatively, if we calculate sediment risk on a seasonal basis the job would fall into the medium sediment risk for all winters during the job and would be a low sediment risk for spring, summer, and fall. Please refer to Attachment E for actual calculations.

Please note that we are not attempting to manipulate a lower risk for a higher risk projects; rather, we are simply trying to ensure a site's pollution risk is accurate so that water quality objectives can be met in a feasible and realistic manner. By accounting better for when erosion will actually occur, a more targeted approach will help improve water quality because the contractors on the ground will be able to focus their efforts and resources to address real erosion risk situations.

The RUSLE equation is a useful tool for estimating erosion risks from a job site, however it should be used to calculate seasonal erosivity. Resources are limited, especially in the current economic conditions, and it is necessary to maximize the resources available for those periods of actual risk.

Improvements are needed to the RUSLE Equation model

Unlike traditional construction sites, road construction activity generally has project boundaries that are linear in shape and may extend for many miles through differing terrain and slopes. The Fact Sheet's Figure 1 is used to obtain the K*LS values for use in the RUSLE equation. LS is the effect of topography on erosion and K is the soil erodibility factor, and Figure 1 provides the product of these two values (what we refer to as the K*LS value).

This figure is a quick way to calculate risk, but Figure 1 is not representative of actual conditions. For instance, the Santa Cruz Area has one K*LS value no matter the location. This means the model groups construction on the peak of the Santa Cruz Mountains in the same risk category as construction on the first marine terrace (relatively flat area which the majority of the town is built on). The lithology of the mountains and of the low lands on which the town is built is the same, but the slopes (the S values) are not because they can range from 0-14% grade; given these significant differences, how can the K*LS value be the same for both locations? This is one of many areas that Figure 1 does not address properly.

If a contractor chooses not to use the Fact Sheet's Figure 1 for the RUSLE equation variable, they then face the task of using the Sediment Risk Factor Worksheet. This method still harnesses the use of the EPA's R-factor calculator. The K factor can be calculated or

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estimated based on soil type in the area. This is a beneficial feature because the Unified Soil Classification system can be used in conjunction with the description provided in the Sediment Risk Factor Worksheet. This leads to a more accurate and realistic K factor. The LS factor, however, is more problematic. The Sediment Risk Factor Worksheet states:

> Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors.

This is a fundamental error in assumption. As hillslope length increases, sediment loss does not necessarily increase. This assumption is only appropriate if the disturbed portion of the slope increases.

If the slope is not disturbed, regardless of the slope's total size, the risk should be based on the disturbed soil areas of the slope that contribute to runoff, not the entire slope itself wherein parts may be undisturbed and have vegetative cover. In road construction the area that is disturbed is often much smaller then the construction boundary zone. There is nothing explicitly outlined in the Sediment Risk Factor Worksheet that makes allowances for such situations. The use of the LS table suggests that watershed slope and sheet flow length are used to obtain LS values, meaning that contractors are treating run on as well as runoff from their site.

The root of the problems with the use of the RUSLE equation is that the equation was developed for the agriculture industry. With proper construction site staging based on seasonality, erosion risks can be minimized but the RUSLE equation is not capable of factoring this in. If the RUSLE equation is to be used in the construction field, there should be a period of field testing and refinement to ensure that the model works appropriately for construction jobs. This is especially important as the RUSLE equation will determine what sorts of compliance risks the contractor faces, and fallacies in the model could lead to costly fines, violations, and litigation.

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In Conclusion

Graniterock sees the need to improve water quality, and believes that our suggestions offer key solutions to developing a revised construction storm water permit that encourages continual improvement of water quality through trend assessment and rapid response. We thank the Board for the opportunity to provide comments, and request that the agency does not hesitate to contact us if further discussion or clarification is needed.

Thank you,

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Attachment A

Highway 1/17 RUSLE calculations

Project details

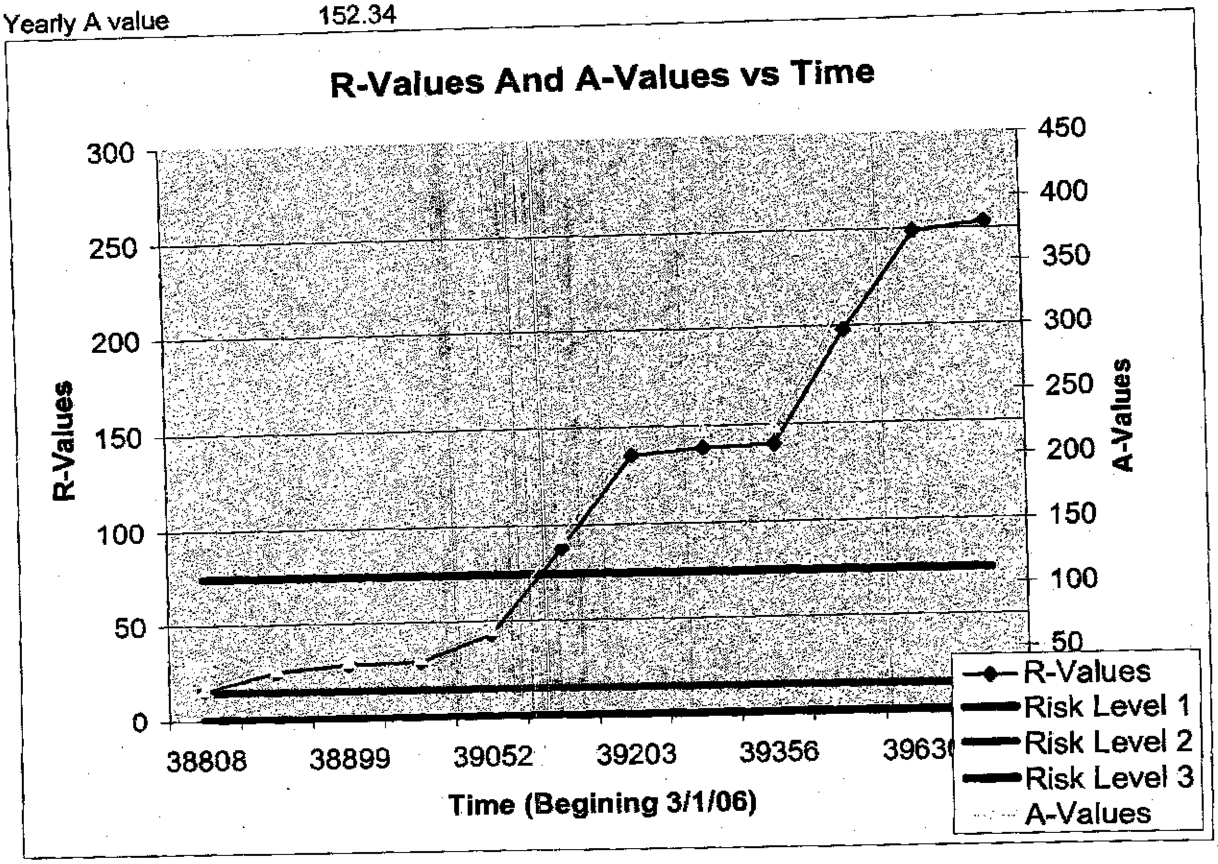
Start Date	3/1/2006
Finish Date	11/1/2008
Lattitude	36.988532
Longitude	-122.018925

RUSLE-Values

R	253.26	(derived from EPA Rainfall Erosivity Calculator)
LS*K	1.6	(derived from Figure 1 of Fact Sheet)
C	1	
P	1	
A	405.216	tons/acre

R-Values	Dates		A-Values
15.85	3/1/2006	4/1/2006	25.36
25.32	3/1/2006	5/1/2006	40.512
28.71	3/1/2006	7/1/2006	45.936
29.8	3/1/2006	10/1/2006	47.68
43.38	3/1/2006	12/1/2006	69.408
87.96	3/1/2006	2/1/2007	140.736
135.32	3/1/2006	5/1/2007	216.512
138.71	3/1/2006	7/1/2007	221.936
139.8	3/1/2006	10/1/2007	223.68
197.96	3/1/2006	2/1/2008	316.736
248.71	3/1/2006	7/1/2008	397.936
253.26	3/1/2006	11/1/2008	405.216

Yearly A value 152.34



Attachment B

Highway 1/17 RUSLE calculations (Seasonal)

Project details		RUSLE-Values	
Start Date	3/1/2006	R	28.58 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/2006	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**45.728** tons/acre
Start Date	6/21/2006	R	0.88 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/2006	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**1.408** tons/acre
Start Date	9/23/2006	R	27.15 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	12/21/2006	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**43.44** tons/acre
Start Date	12/21/2006	R	64.44 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	3/21/2007	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**103.104** tons/acre
Start Date	3/21/2007	R	18.66 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/2007	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**29.856** tons/acre
Start Date	6/21/2007	R	0.88 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/2007	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**1.408** tons/acre
Start Date	9/23/2007	R	27.15 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	12/21/2007	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**43.44** tons/acre
Start Date	12/21/2007	R	64.44 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	3/21/2008	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**103.104** tons/acre
Start Date	3/21/2008	R	18.66 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/2008	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**29.856** tons/acre
Start Date	6/21/2008	R	0.88 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/2008	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1

Longitude	-122.018925	**A**	**1.408** tons/acre
Start Date	9/23/2008	R	3.85 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	11/1/2008	LS*K	1.6 (derived from Figure 1 of Fact Sheet)
Lattitude	36.988532	C and P	1
Longitude	-122.018925	**A**	**6.16** tons/acre

Attachment C

Santa Cruz Mountains Erosion

	Units		Source
Mountain range peak height	2600	ft	*
Mountain range average height	1000	ft	*1
Area (square miles)=	441	sq mi	*
Area (acres)=	282240	acre	
Area (square feet)=	12294374400	sq ft	
Volume (cubic feet)=	1.22944E+13	cu ft	
Specific Gravity=	2.56		*2
Density (pounds/cubic foot)=	159.744	lbs/ cu ft	*3
Mass=	1.96395E+15	lbs	
Mass (tons)=	9.81976E+11	tons	
Erosion rate (tons/acre)=	152.34	tons/acre	*4

Time untill Santa Cruz Mountains elevation reaches sea level **22839 years**

Age of the Santa Cruz Mountains 3-5 million years old

Sources

*= http://www.santacruz.org/press/p-facts.shtml

*1= Google Earth-Approximation based on 30 elevation data points

*2= As measured at Graniterock Quail Hollow Quarry located in Felton California

*3= 62.4 lbs per cubic ft= density of water

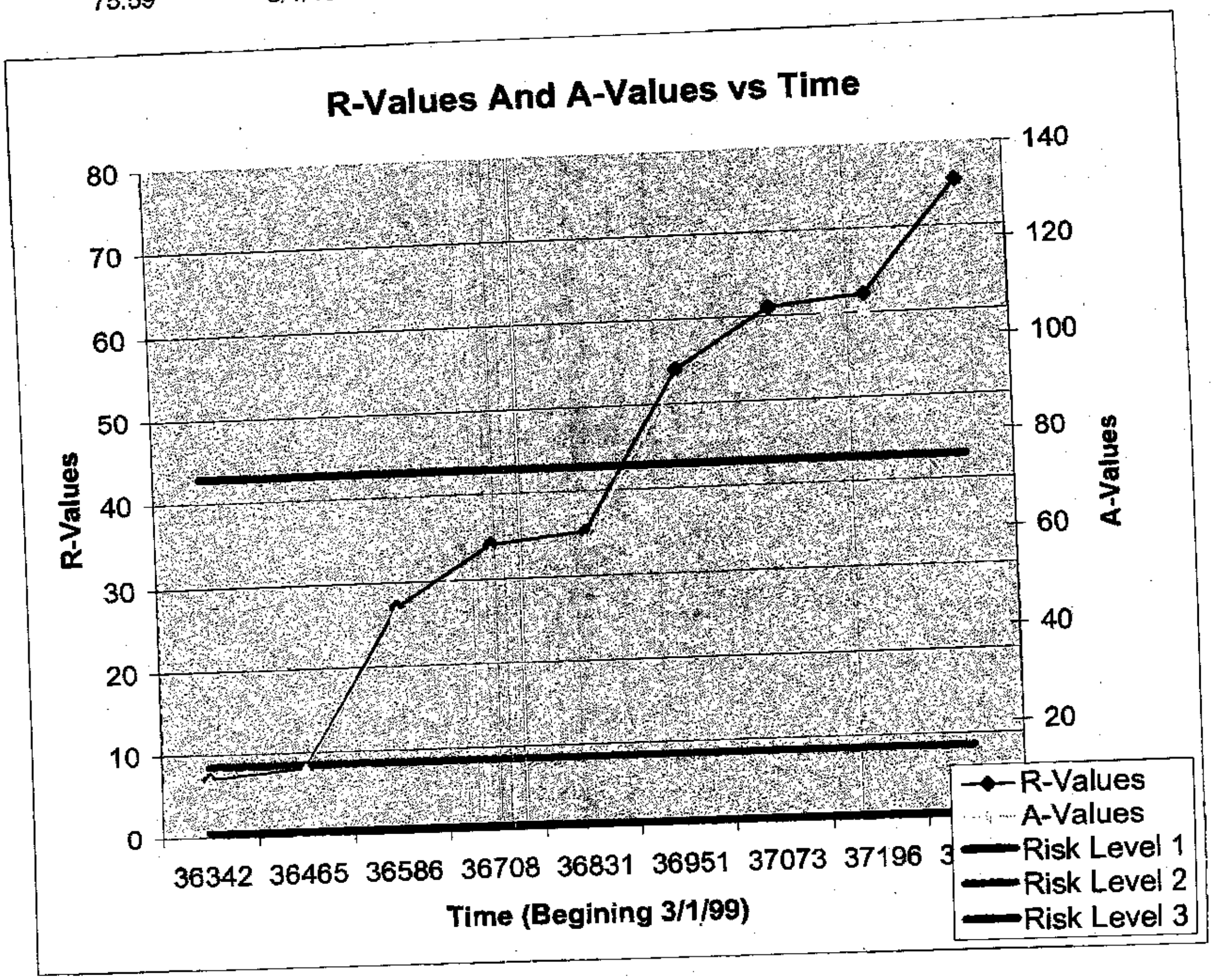
*4= RUSLE equation values from Highway 1/17 calculations

Attachment D

San Miguel Canyon RUSLE calculations

Project details		**RUSLE-Values**	
Start Date	3/1/1999	R	75.59 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	2/1/2002	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8007785	C	1
Longitude	-121.6652088	P	1
		A	128.503 tons/acre

R-Values	Dates		A-Values
7.05	3/1/1999	7/1/1999	11.99
8.16	3/1/1999	11/1/1999	13.87
27.12	3/1/1999	3/1/2000	46.10
34.05	3/1/1999	7/1/2000	57.89
35.16	3/1/1999	11/1/2000	59.77
54.12	3/1/1999	3/1/2001	92.00
61.05	3/1/1999	7/1/2001	103.79
62.16	3/1/1999	11/1/2001	105.67
75.59	3/1/1999	2/1/2002	128.50



Attachment E

San Miguel Canyon RUSLE calculations (Seasonal)

Project details		**RUSLE-Values**	
Start Date	3/1/1999	R	7.01 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/1999	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**11.917** tons/acre
Start Date	6/21/1999	R	0.22 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/1999	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**0.374** tons/acre
Start Date	9/23/1999	R	6.66 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	12/21/1999	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**11.322** tons/acre
Start Date	12/21/1999	R	15.82 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	3/21/2000	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**26.894** tons/acre
Start Date	3/21/2000	R	4.58 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/2000	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**7.786** tons/acre
Start Date	6/21/2000	R	0.22 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/2000	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**0.374** tons/acre
Start Date	9/23/2000	R	6.66 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	12/21/2000	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**11.322** tons/acre
Start Date	12/21/2000	R	15.82 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	3/21/2001	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**26.894** tons/acre
Start Date	3/21/2001	R	4.58 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	6/21/2001	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**7.786** tons/acre
Start Date	6/21/2001	R	0.22 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	9/23/2001	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1

		A	**0.374** tons/acre
Longitude	-121.6655041		
Start Date	9/23/2001	R	6.66 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	12/21/2001	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**11.322** tons/acre
Start Date	12/21/2001	R	7.85 (derived from EPA Rainfall Erosivity Calculator)
Finish Date	2/1/2002	LS*K	1.7 (derived from Figure 1 of Fact Sheet)
Lattitude	36.8011935	C and P	1
Longitude	-121.6655041	**A**	**13.345** tons/acre

Attachment F

Caltrans First Flush Study Data

Data derived from: Table D.1 Basic Statistics of MFF for UCLA 1, 2, and 3 (2000-2003)
Stenstrom, Michael K. et al, First Flush Phenomenon Charecterization, Data Appendix, p.38
Prepared for: California Department of Transportation Division of Environmental Analysis
CTSW-RT-05-73-02.6, August 2005

	Storm Water Discharge %	% of total mass discharged
Total Suspended Solids	10	19.45
	20	35.76
	30	47.22
	40	56.52
	50	64.70

	Storm Water Discharge %	% of total mass discharged
Turbidity	10	14.72
	20	27.16
	30	37.56
	40	46.72
	50	55.55