January 18, 2002

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Attention: Gary Sugano, Principal Planner

Subject: Draft EIR For RiverPark Project
SCH #2000051046

The subject EIR has been reviewed by Hanson Aggregates, which owns a large portion of the RiverPark B area. Under the proposed project, this land would be acquired from Hanson and its uses changed to accommodate residential development. However, this current ownership includes inactive mining pits, concrete, asphalt, and recycle plants, and a stockpile area. This area is subject to an existing reclamation plan, El Rio Plant Rehabilitation Plan which was approved by Ventura County in 1979 and subsequently modified. Under that plan, Hanson would partially refill the mining pits and restore the site as open space. In contrast, the RiverPark project proposes development, including residential, commercial and public facilities uses in addition to open space. Among other actions related to the project, RiverPark proposes a new reclamation plan for the mining site to address a higher intensity use for Area 'B' – additional housing opportunities for the City of Oxnard. RiverPark's proposed reclamation plan would replace the existing reclamation plan. The EIR analyzes the potential environmental effects of this new development proposal.

Hanson Aggregates supports the RiverPark project as proposed. However, we are concerned that some elements of the EIR overstate baseline conditions and, therefore, make overly conservative assumptions about the level of potential impact and need for mitigation. While we have no objection to the adoption of the measures propose in the context of the current proposal, we are concerned about the implications for Hanson Aggregates activities on the site should the RiverPark project not be approved.

For example, the EIR uses extremely conservative assumptions, effectively modeling a "worst-case" impacts analysis in the context of residential use. This approach may be appropriate for assessing property intended for the proposed use, but there is no indication that these assumptions provide appropriate standards for implementation of the existing reclamation plan. The conservative nature of the assumptions used in the Water Resources section are discussed in the attached analysis by Dr. Barry Keller. The conservative nature of assumptions used in the Earth Resources section are discussed in the attached analysis by The J. Byer Group. The EIR should be revised to clarify the

HANSON-1

distinctions between the descriptions of *actual* baseline conditions and the descriptions of conditions that are based on conservative *assumptions*. HANSON-1

Similarly, many mitigation measures and other improvements identified in the EIR are designed to mitigate potential environmental effects associated with the proposed residential development, but would be inappropriate in a "no project" scenario. For example, the RiverPark project envisions residential development in the vicinity of the Vickers pit and the EIR includes mitigation measures to address this. If residential development does not occur there, leaving the current reclamation plan in place, it would not be necessary to mitigate artificial fill in northwestern end of the Vickers Pit, as described by mitigation measure 4.3-30. It also would not be necessary to mitigate artificial fill in the stockpile and plant areas as described by mitigation measures 4.3-21 and 4.3-22. Moreover, the EIR contemplates drainage improvements and revegetation to accommodate the proposed development. If the property were not developed as RiverPark plans, the drainage improvements and revegetation would not be necessary. HANSON-2

We also offer the following clarifications:

1. Page 2.0-9, 1st Complete Paragraph
   DEIR Text: Implementation of this existing reclamation plan would require approximately 6.4 million cubic yards of material to be imported to the site to fill the pits to the levels required by the reclamation plan.
   Comment: Hanson agrees that approximately 6.4 million cubic yards are needed to implement the existing reclamation plan. Approximately 6.1 million cubic yards are located onsite and 0.3 million cubic yards would need to be imported to implement the existing reclamation plan. HANSON-3

2. Page 4.1-24, Paragraph 3
   DEIR Text: The company has initiated actions to reclaim the mine pits pursuant to an approved reclamation plan. Upon completion of the reclamation project the facility will serve as a groundwater recharge basin.
   Comment: To clarify, Hanson has initiated restoration activities in accordance with the existing approved reclamation plan. These activities include removal of the rock and sand plant and other structures, remediation of known contamination, and removal of boneyards. The pits will serve as a groundwater recharge basin after the proposed RiverPark reclamation plan is implemented. HANSON-4

3. Page 4.5-69, Footnote 47
   DEIR Text: West Coast Environmental and Engineering, RiverPark Reclamation Plan, Prepared for Hanson Aggregates West, Inc. August 1, 2001. HANSON-5

Comment: Hanson Aggregates asked West Coast Environmental to prepare a reclamation plan that reflects the RiverPark proposal. This reclamation plan is not being proposed by Hanson Aggregates. HANSON-5

Please contact this office if there are any questions.

Steven Zacks

Steve Zacks
Environmental/Property Manager

Barry Keller Ph.D., RG, CHG -Hydrogeophysicist
741 Dolores Drive, Santa Bárbara, California 93109 USA

14 January 2002

This is a review of a version of the City of Oxnard Draft Environmental Impact Report (DEIR – SCH #2000051046, dated December 2001) for the RiverPark Project . This review is oriented towards the relation between the Hanson Aggregates El Rio pits and adjacent groundwater, in both the pre-project condition and in regard to project elements.

The potential for stormwater runoff from agricultural, residential, or industrial areas to impact water resources is of concern and has in recent years received increasing regulatory scrutiny, and any measures that can be taken to reduce or eliminate this potential impact are certainly worthwhile. In the case of the RiverPark Project, engineered stormwater runoff controls for runoff water that in the existing, pre-project configuration would reach the pits appear to be adequately protective of groundwater. However, the occasional runoff that would still reach the pits is evaluated in the DEIR document as having "significant" impacts to groundwater, due to modeled concentrations of iron, manganese, and nickel. In fact, there is virtually no possibility that water with these concentrations could actually reach groundwater, nor has done so in the past, due to dilution with existing pit water and rainwater that falls directly on the pits. There are no data to indicate that runoff of stormwater into the pits has ever impacted groundwater quality. The extremely conservative nature of the "significant" impact evaluation needs to be made clear. Several specific text clarification suggestions are included below to make this clarification. HANSON-6

The groundwater model concentrations are based on conservative assumptions (in other words, artificially HIGH) values used to ensure a viable runoff control design, but they do not represent the true existing situation. The modeling is based on the assumption that the runoff water recharges directly to groundwater, with losses only for settling of solid particles, but "Dilution within the basins is not considered as part of the removal mechanisms or anticipated constituent concentrations." (Appendix 4.5-5, page 27, particulate setting addressed on page 31 – 32.) In reality there are three sources of water to the pits: 1) the runoff that was modeled; 2) rainfall directly on the surface of the pits; and 3) discharge from adjacent groundwater on the upgradient side of the pits. Although it has never been precisely quantified, the third source in all probability represents the great majority of the water in the pits and is the main source of water that subsequently recharges the groundwater on the downgradient side of the pits. Furthermore, the modeling does not consider the mechanism of recharge from the pits to groundwater. Although this mechanism has never been investigated in detail, it is very possible that siltation of the floor and lower walls of the pits makes the recharge fairly slow compared to the movement of groundwater in the adjacent aquifer, further diluting the contribution from the pits. HANSON-7

TEXT CLARIFICATIONS

Page S-15 Header "ISSUES RAISED DURING ENVIRONMENTAL REVIEW". The sentence "The primary issued raised during environmental review of the proposed project has been the impact of stormwater runoff on the groundwater exposed in the existing mine pits on the site" could easily be misinterpreted to indicate that impacts to groundwater have been documented in the existing condition, which is not the case. The sentence should be replaced with the following: "The primary issue raised during the environmental review of this project has been the potential for stormwater that discharges to standing water in the existing mine pits on the site to impact adjacent groundwater resources, although there are no data to indicate that any such degradation of groundwater quality has ever actually occurred." HANSON-8

Page 4.5-11. This section discuses the relation of elevation of the water in the pits to that of adjacent groundwater. In this section the term "exposed water table" is used, whereas elsewhere the water in the pits is called "exposed groundwater". In fact, the water in the pits is surface water that is discharged from groundwater on the upgradient side and recharges to groundwater on the downgradient side. The text points out that, "In general, pit water levels appear to correlate to levels measured in nearby wells and respond similarly to water level changes over time." A following sentence should be added: "The observation that the water in the pits does not rise noticeably relative to groundwater during wet periods or fall during dry periods reflects the condition that most of the water in the pits is water that came from groundwater on the upgradient side and that the volumetric contribution to the pit water from runoff or direct rainfall is minor." HANSON-9

Page 4.5-50. The following sentence would be sufficient without the second, qualifying phrase: "The sampling results indicate that pit water quality is similar to that of the unexposed groundwater in the area, although it is unclear how representative these samples are due to the uncertainty in the timing of sample collection relative to the duration of the sampled storm event." The important point is that at any time that a sample might be collected, even during a storm, constituents due to runoff would be greatly diluted in the pits, both by the existing pit water and by direct rainfall, which is by itself volumetrically greater than the runoff. Therefore, the timing of the sampling of pit water is not of great importance. Samples that have been taken during storm events of actual runoff, prior to its entering the pits, have confirmed that the presence of dissolved constituents in the runoff itself. HANSON-10

Page 4.5-60. The criterion for evaluating an impact to groundwater as "significant" is given in the following bullet. " • Any discharges [sic – should be singular] to exposed groundwater in the existing mine pits containing concentrations of selected constituents greater than ambient groundwater concentrations or Basin Plan objectives as measured where the discharged water physically leaves the pits is identified as a HANSON-11

significant impact." However, the modeled runoff concentrations apply only to the point where the water enters the pits, not leaves it. As noted above, the water in the pits is actually surface water, not "exposed groundwater". Water from the pits recharges groundwater on the downgradient side by mechanisms that have not been studied in detail. By the time contaminant-bearing runoff water actually reached groundwater, it would be greatly diluted by the pit water and direct rainfall. Another sentence should be added to the bullet: "This criterion is extremely conservative, because the concentrations in the runoff water would be greatly diluted before actually reaching groundwater." HANSON-11

Page 4.5-86 Header "**Constituents with Significant Impacts**". On the basis of the criterion on page 4.5-60, runoff water entering the pits is modeled as having "significant" concentrations that exceed ambient groundwater concentrations for iron (0.21 mg/L vs 0.13 mg/L), manganese (0.5 mg/L vs 0.3 mg/L), and nickel (.007 mg/L vs .003 mg/L). As noted above, it is very unlikely that these concentrations would ever reach groundwater. They would be diluted to below the ambient groundwater conditions by direct rainfall on the pits alone, and much more so by the existing pit water. Therefore, a sentence should be added to each of the paragraphs for the individual metals: "As noted previously, the "significance" criterion is extremely conservative, and it is very unlikely that these concentrations would ever actually reach groundwater." HANSON-12

Page 4.5-87. Header "***Frequency of Impacts to Groundwater***". The text describes the modeled total elimination of runoff flow to the pits that the project design would have provided during the 20-year hydrologic record period: "This is a positive benefit of the proposed project as it would substantially reduce the amount of pollutant loading to the Water Storage/Recharge basins, particularly from the early storm period or "first flush", in comparison to existing conditions." This is true, and elimination of the potential for street and industrial contaminants to impact groundwater is certainly a worthy goal. However, a following sentence should be added: "However, it is important to note that the existing condition has not, as far as is known, resulted in any impact to groundwater downgradient from the pits." HANSON-13

Page 4.5-104. Header "***Mitigation Measures, Iron, Manganese, and Nickel***". Two possible water treatment schemes to reduce metals concentrations are discussed, but both are considered to be "infeasible" due to cost and operational difficulties. A final sentence should be added to the discussion of each alternative: "Since the impact which would be mitigated is an extremely conservative modeled condition, and not an actual documented impact to groundwater quality, such a measure is not justified." HANSON-14

Page 4.5-12. Header "**UNAVOIDABLE SIGNIFICANT IMPACTS**". The same modeled concentrations of iron, manganese, and zinc in runoff water entering the pits are identified as "unavoidable significant impacts". The previously mentioned factors of relatively low concentrations, rarity of occurrence, and excessive cost of mitigation measures are repeated. However, a final sentence should be added to the last HANSON-15

paragraph: "As noted above, the identified impacts are extremely conservative modeled results, and it is very unlikely that even these relatively low metals concentrations could ever actually reach groundwater."

HANSON-15

Section 5. **ALTERNATIVES.** In several places in the alternatives section are statements that could be misunderstood to indicate that the existing pits have caused degradation of groundwater quality. In each case, the term "impacts to groundwater quality" should be replaced with "conservatively modeled potential impacts to groundwater quality". These places are: the end of the second paragraph under "**Water Resources**" on page 5.0-10; the end of the paragraph under "**Water Resources**" on page 5.0-19; the end of the paragraph under "**Water Resources**" on page 5.0-27; the end of the paragraph under "**Water Resources**" on page 5.0-34; and in each of the descriptions under "**CONCLUSIONS**" on pages 5.0-38 and 39.

HANSON-16

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"Trust the Name You Know"

January 18, 2002
JB 18356-I

Hanson Aggregates West, Inc.
3555 Vineyard Avenue
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Attention: Steven Zacks, Environmental/Property Manager

Subject

Review of Draft Environmental Impact Report
Proposed Riverpark Project and Reclamation of Gravel Pits
Former S.P. Milling Company Site
3555 Vineyard Avenue
El Rio Area of Ventura County, California

References: **Reports by The J. Byer Group, Inc.:**

Draft Geotechnical Engineering Exploration, Proposed Reclamation of Gravel Pits, Former S.P. Milling Company Site, 3555 Vineyard Avenue, El Rio Area of Ventura County, California, dated May 23, 2000 and;

Response to Fugro EIR Report, Proposed Reclamation of Gravel Pits, Former S.P. Milling Company Site, 3555 Vineyard Avenue, El Rio Area of Ventura County, California, dated April 20, 2001.

Report by Impact Sciences:

City of Oxnard, Draft Environmental Impact Report, Riverpark Project, Volumes I, II, and III, December 2001.

Report by Fugro West, Inc.:

Geotechnical and Geological Input for the Environmental Impact Report, Riverpark A and B, City of Oxnard and El Rio Area of Ventura County, California, dated May 2000.

Report by Earth Systems Consultants, Inc.:

Southern Pacific Milling Borrow Pit, Slope Stability Analyses of Borrow Pits Along Montgomery and Lambert Streets, dated October 24 1997.

Dear Mr. Zacks:

As requested, The J. Byer Group, Inc. has reviewed the Draft Environmental Impact Report (DEIR) prepared by Impact Sciences and geotechnical input by Fugro. We have the following comments and clarifications regarding the geotechnical aspects of the DEIR.

NATIVE ALLUVIUM

Static and Seismic Gross Stability

Fugro concludes that native slopes that are at a gradient slightly steeper than 2:1 (1.9:1) are grossly stable under static (safety factor of at least 1.5) and seismic conditions (safety factor of at least 1.1). Where existing slopes around the margins of the pit are steeper than 2:1, Fugro recommends trimming the slopes to between 2:1 and 2.5:1. The J. Byer Group, concurs with Fugro that 2:1 slopes in native alluvium are grossly stable under static and seismic loading. Trimming native slopes that are steeper than 2:1 to 2:1 is reasonable and in conformance with the current reclamation requirements and expectations. HANSON-17

It is our opinion that 2.5:1 slopes shown on the Slope Reclamation Plan for Riverpark B (Plate 3 by Fugro, dated July 2001) are overly conservative. The tops of 2.5:1 slopes are shown encroaching into existing flood control basins (southeastern slopes of Brigham and Vickers pits) and toward the offsite properties (northeastern Small Woolsey Pit). Slopes that are 2.5:1 will have a higher calculated static safety factor. However, the additional safety factor is not needed since 2:1 slopes more than exceed the minimum requirements for stability. Furthermore, the flatter slopes could move the top of slopes closer to the adjoining properties, or require special grading techniques.

Due to the difficulty in determining the topography of the base and lower margins of the pits as a result of variable groundwater levels, Fugro has made conservative assumptions as to the steepness and depths of all of the pits. Therefore, the toes and tops of the 2:1 trims shown on Fugro's reclamation plan represent the 'worst case scenario'. Accurate pit topography will result in more realistic slope configurations and reduce the amount of grading performed for mitigation. HANSON-17

Pages 4.3-32, 4.3-45, 4.3-47, and 4.3-49 contain unduly conservative statements. On page 4.3-32, bullets 3, 7, 10, and 14 state that the existing slopes do not meet minimum factor of safety requirements. However, the southeastern slope of the Brigham Pit, the southeastern slope of the Vickers Pit, the southeastern slope of the Small Woolsey, and the northeastern slope of the Large Woolsey are comprised of native alluvium with slope gradients that are near 2:1. Our May 23, 2000 report contains calculations that indicate these slopes to be stable (safety factor greater than the minimum requirements) under static and seismic conditions. Also, these slopes are similar to the generic slope analyzed and found to be stable by Fugro. Mitigation measures 4.3-28, 4.3-31, 4.3-34, and 4.3-37 are not required. HANSON-18

Lateral Movement

The J. Byer Group agrees with Fugro that due to its density and strength, the native alluvium is not subject to liquefaction or a loss of strength during an earthquake. However, Fugro has determined that the ground adjacent to the margins of the pits may move laterally toward the pits in the event of a large earthquake. Reportedly, Fugro's lateral movement analysis is based upon methods and procedures contained in *Guidelines for Analyzing and Mitigating Landslide Hazards in California*, a 2000 DRAFT publication for the CDMG and SCEC. It should be noted that this publication has not been finalized or adopted for use by the State of California, County of Ventura, or local agencies. Newmark's methods were apparently used, but calculations, assumptions, and ground motion data were not available for review. As a consequence of the 'excessive movement', overly conservative mitigation consisting of setbacks and mechanical slope stabilization were identified for the DEIR. HANSON-19

Apparently, Fugro used a cohesion/phi angle combination of 150 psf/35 degrees, which is more conservative than strength data of the native alluvium contained in reports by Byer, 2000, Earth Systems, 1997, and Fugro 1999 and 2000. The strengths assumed for the analysis are also more conservative than shear strength correlations contained in the *Guidelines for Analyzing and Mitigating Landslide Hazards in California*, publication. Fugro acknowledges that the phi angle is conservative and would likely be revised higher upon completion of '*more comprehensive slope material characterization and shear strength testing.*' HANSON-20

Shear strengths assumed by Fugro for the deformation analysis appear too conservative based upon data collected by Byer Group, Fugro, and Earth systems. Because of the low assumed shear strengths, the Newmark analysis used by Fugro over-estimates deformation. The difference in phi angle determined through correlations and laboratory testing and what was assumed for the stability and deformation analyses in the EIR is significant. Higher phi angles (stronger soils) result in a higher yield acceleration and corresponding lower deformation. Seismic deformation at the offsite structures (upslope from Large Woolsey and Small Woolsey pits) will be nil or within 'acceptable' limits using more realistic strength values. HANSON-21

It is the opinion of The J. Byer Group, Inc. that the phi angle assumed by Fugro to represent the native alluvial soils is overly conservative and not supported by field and laboratory data. As a result, the corresponding calculations and mitigation schemes are believed to be too cautious. Shear strengths determined by The J. Byer Group and Earth Systems will result in no to very little lateral movement hazard and no mitigation requirement. Mitigation schemes identified in the DEIR 4.3-36 second paragraph, 4.3-41, 4.3-43, 4.3-44 are not necessary. HANSON-22

EXISTING FILL

Fugro and Byer Group both agree that the existing fill, whether placed hydraulically or as spill fill, is not surficially or grossly stable under static or seismic conditions. It is concurred that any fill on the slopes should be removed and replaced as compacted fill. The areas of the existing fill have been identified in the previous studies of the site. In areas of proposed Riverpark slopes and development, such as along the northern sides of the pits, Fugro has recommended deep removal of fill and ground improvements. This will only be required to construct the slopes planned as part of the Riverpark project. Deep removal and deep dynamic compaction will not be required for the pit reclamation. HANSON-23

We concur with Fugro that further study and analyses, based upon more accurate topographic maps, will reduce the scope of the mitigation that has been identified. HANSON-24

The J. Byer Group appreciates the opportunity to offer our consultation and advice on this project. Any questions regarding this or the referenced draft report should be directed to the undersigned.

Very Truly Yours,
THE J. BYER GROUP, INC.

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Hanson Aggregates (HA)

Hanson-1

In response to the limited monitoring data available for runoff for the site, several assumptions were made with regard to runoff water quality/concentrations. As indicated in the Draft EIR these assumptions are conservative and reflect the nature of stormwater runoff, which can be highly variable in quality. The data used represents the best information available. Care was taken to include the results of Hanson Aggregates monitoring data (Table 4.5-16), but in some cases additional information was required to determine project impacts based on the proposed land uses and the proposed stormwater treatment system. The Draft EIR clearly states where assumptions have been made and where baseline conditions have been established based on monitoring data.

Hanson-2

The Draft EIR identifies measures to mitigate the impacts of the proposed RiverPark Project. It is acknowledged that many of these measures would not be required if the uses included in the RiverPark Project are not developed. Reclamation of the site under the existing approved County Reclamation Plan would for open space uses would not require many of the identified mitigation measures and improvements.

Hanson-3

This comment is noted. The majority of the earth materials needed to implement the existing approved County Reclamation Plan are located on the site.

Hanson-4

This comment on the status of the implementation of the existing approved County Reclamation Plan is noted.

Hanson-5

The City recognizes that the new reclamation plan evaluated in the Draft EIR is proposed by RiverPark, LLC and not Hanson Aggregates.

Hanson-6

This comment on the conservative nature of the water quality analysis is noted. The Draft EIR describes the conservative methodology used for the analysis and identification of impacts.

Hanson-7

In cases where there were gaps in existing monitoring data for runoff on the site, analogous data representing the best available information was used. It has been assumed that these data are representative of the existing conditions, but only a systematic sampling program conducted over several years could verify this. While it is true that other mechanisms, such as rainfall directly into the pits and upgradient groundwater, are available to further dilute runoff concentrations, these effects are difficult to quantify. Rainfall dilution would be expected to be greater for larger storm events when runoff concentrations would be expected to be lower and less for smaller storm events when runoff concentrations would be expected to be higher. Upgradient dilution would be a function of water levels within the gravel pits that is difficult to correlate to any given situation. Based on the high degree of variability, it was decided not to include these factors in the analysis, although it is acknowledged that they would help reduce the runoff pollutant concentrations.

Hanson-8

The referenced sentence is revised to read:

The primary issue raised during environmental review of the project ~~has been the impact of stormwater runoff on~~ is the potential for stormwater runoff to impact groundwater exposed in the existing mine pits on the site.

Hanson-9

This comment is consistent with the information presented in the Draft EIR.

Hanson-10

It is acknowledged that direct rainfall into the pits and upgradient dilution can dilute pollutants in the runoff. However, the point being conveyed in the sentence referenced in this comment is that pollutant concentrations can vary over the course of a storm event. If the samples were collected at the very end of

a storm event, they would likely be of lesser concentration than those collected early in the storm event. Without that information, it is difficult to determine whether the sample is representative of the event mean concentration.

Hanson-11

The City acknowledges that the water quality analysis is conservative. A conservative significance thresholds was established due to the variability in runoff quality to ensure maximum protection of water quality.

Hanson-12

The City acknowledges that the water quality analysis is conservative. A conservative significance thresholds was established due to the variability in runoff quality to ensure maximum protection of water quality.

Hanson-13

This comment on the conservative nature of the water quality impact analysis is noted.

Hanson-14

This comment on the conservative nature of the water quality impact analysis is noted.

Hanson-15

This comment on the conservative nature of the water quality impact analysis is noted.

Hanson-16

The text of the Alternatives section clearly indicates that the alternatives are being compared to the proposed project and not existing conditions.

Hanson-17

The J. Byer Group (JBG) indicates that the proposed 2.5h:1v slopes ".... are overly conservative..." because factors of safety will be higher than those for 2h:1v slopes. The proposed 2.5h:1v slopes were developed to allow for lower estimated lateral displacements from strong ground motion and to better assure that slopes consist entirely of native, not fill, materials. Please note that additional geotechnical studies will be performed prior to construction to refine preliminary analyses for the pit slopes.

The JBG indicates that the proposed slope configurations were developed for estimated "worst case" scenarios. This statement is correct. It is agreed that more accurate topography would allow for the proposed slope configurations to be refined; however, more accurate topography is not readily available, because it relies heavily on the historical record (i.e., past episodes of steepened cut slopes or deeper excavations that have since been filled with uncontrolled fills) which is far from complete. A considerable effort was made to develop available topographic information including compositing topographic information from old topographic data and stereo photography. More accurate topography might be obtained by performing recent topography surveys, but such surveys would not capture probable maximum historical excavation depths in the pits and on the pit slopes that have been subsequently been filled with loose fill.

Hanson-18

The JBG indicates that the southeastern slope of the Brigham Pit, the southeastern slope of the Vickers Pit, the southeastern slope of the Small Woolsey Pit and the southeastern slope of the Large Woolsey Pit, with near 2h:1v slopes, meet minimum requirements in terms of the factor of safety for static and pseudostatic conditions. However, Appendix 4.3, pages A-1 through A-3 ("Pit Mining History," Fugro 2001), summarizes historical slope excavations much steeper than 2h:1v along the southeastern slopes of the Brigham, Vickers, and Small Woolsey Pits and artificial fills on the order of about 15 feet deep along the southeastern slope of the Large Woolsey Pit, conditions that would not satisfy minimum factor of safety requirements.

Hanson-19

For the Draft EIR, Fugro completed evaluations to assess whether procedures presented in the 2000 draft of "Guidelines for Analyzing and Mitigating Landslide Hazards in California" satisfied

requirements for lateral displacements resulting from strong ground motion. Fugro completed those evaluations for several reasons:

- The referenced "Guidelines" will be adopted by the State once they are finalized. Since the timing of development of RiverPark is not certain, it was prudent to evaluate how pit slopes might satisfy the pending State requirements.

- Geotechnical literature indicates that satisfying factors of safety for pseudostatic conditions does not presuppose that lateral movements are not significant. If fact, the Northridge earthquake demonstrated that significant lateral movements large enough to cause damage to adjacent structures can occur even though the slope did not "fail." Slope stability evaluations for pseudostatic conditions were originally developed for situations like dam embankments to mitigate failure, but could undergo fairly large lateral movements up to a meter.

- In light of present day perceptions about the prospect of lateral movements near slopes from strong ground motion, the intent was to assess, in a conservative stance, possible lateral displacements in accordance with reasonable procedures to mitigate potential impacts to structures. With the advent of the pending "Guidelines," despite the fact they have not been finalized or adopted, it would be imprudent and unethical not to assess or mitigate possible impacts in a reasonable fashion.

Subsequent studies to be performed for the pit slopes prior to construction will document the result of the evaluations of lateral displacements.

Hanson-20

For the preliminary slope evaluations completed for the Draft EIR, values of cohesion were used (150 psf) and friction angle (35 degrees) that are believed to be conservative. However, the values were based on observations and back calculations for incipient failures of 20 to 25-foot-high, near vertical cut pit walls in the Rose Avenue pit located east of Vineyard Avenue. The JBG argues that higher values can be documented using correlations with other gradational and density index parameters. To date, actual shear strength data has only been generated on small diameter samples that may well be influenced by gravel particles. Planned studies will endeavor to perform large-scale testing to accommodate gravel sizes, although large scale testing introduces its own set of problems. Once this large-scale test data is available the shear strength data will be reassessed and values will be used that appear appropriate.

Hanson-21

See response to Comment Hanson-20 above.

Hanson-22

See response to Comment Hanson-20 above.

Hanson-23

See response to Comment Hanson-20 above.

Hanson-24

See response to Comment Hanson-20 above.