vibrations per minute when immersed in concrete. The vibration speed can go up to 10,500 vibrations per minute. The Contractor shall immediately replace improperly operating vibrators with acceptable vibrators. Two standby vibrators in good working condition shall be provided.

16.6.19 Finishes and Finishing -

16.6.19.1 General -

a. Allowable deviations from plumb or level and from the alignment, profile grades, and dimensions shown on the Drawings as specified in Section 16.6.16, Tolerances for Concrete Construction, herein, are defined as "tolerances" and are to be distinguished from irregularities in finish as described herein. The classes of finish and the requirements for finishing of concrete surfaces shall be as specified in this Section or as indicated on the Drawings. The Contractor shall keep the Engineer advised as to when finishing of concrete will be performed. Unless inspection is waived in each specific case, finishing of concrete shall be performed only in the presence of the Engineer. Concrete surfaces will be tested by the Engineer where necessary to determine whether surface irregularities are within the limits hereinafter specified.

b. Surface irregularities are classified as "abrupt" or "gradual." Offsets caused by displaced or misplaced form sheathing or lining or form sections, or by loose knots in forms or otherwise defective form lumber will be considered as abrupt irregularities, and will be tested by direct measurements. All other irregularities will be considered as gradual irregularities, and will be tested by use of a template, consisting of a straightedge or the equivalent thereof for curved surfaces.

16.6.19.2 Formed Surfaces -

a. General - The classes of finish for formed concrete surfaces are as follows:

b. Finish F1 - Finish F1 applies to formed surfaces upon or against which fill material or concrete is to be placed. The surfaces require no treatment after form

removal except for repair of defective concrete and filling of holes left by the removal of fasteners from the ends of tie rods and the specified curing. Correction of surface irregularities will be required for depressions only and only for those which, when measured as described in Section 16.6.22, exceed 1 inch.

c. Finish F2 - Finish F2 applies to formed surfaces to receive stone veneer and to all formed surfaces not permanently concealed by fill material or concrete, or not required to receive Finish F4. Surface irregularities, measured as described in Section 16.6.22, shall not exceed one-fourth of an inch for abrupt irregularities and one-half of an inch for gradual irregularities.

d. Finish F4 - Finish F4 applies to formed surfaces for which accurate alignment and evenness of surface are of paramount importance from the standpoint of eliminating destructive effects of water action. Surfaces to receive an F4 finish are walls of the spillway structure exposed to hydraulic flow.

Except as hereinafter provided, abrupt irregularities on surfaces to receive an F4 finish, measured as described in Section 16.6.22, shall not exceed one-fourth of an inch for irregularities parallel to the direction of flow, and one-eighth of an inch for irregularities not parallel to the direction of flow.

Abrupt irregularities on F4 finish shall be completely eliminated by grinding on a bevel of 1:20 ratio of height to length. Grinding to a depth in excess of one-fourth of an inch will not be permitted, and any irregularity requiring grinding in excess of this limit shall, in lieu of grinding, be excavated and removed to a sufficient depth below the finished grade, and the irregularity repaired in accordance with the provisions of Section 16.6.22, Repair of Concrete, herein. If any gradual irregularity on the foregoing surfaces is greater than the specified one-quarter inch limitation, the irregularity shall be reduced by grinding so that it is within the specified limit. Grinding in excess of one-fourth of an inch will not be permitted and instead such irregularities shall be excavated and repaired to the required surface levels as required for abrupt irregularities. The slopes produced by grinding gradual

irregularities, and the slopes of such irregularities that are steeper than the bevels specified for ground surfaces produced in eliminating abrupt irregularities, shall be reduced by grinding so that they conform with such bevels. Where depressions in the finished surfaces occur, the depressions shall be excavated, properly prepared, and brought to the required surface levels, in accordance with the provisions of Section 16.6.22, Repair of Concrete, herein. Irregularities to be repaired with concrete or epoxy-bonded concrete shall be saw cut 1 and ½ inches deep around the perimeter of the area. The saw cuts shall be normal to the surface to provide a sharp, square surface edge; and shall be parallel to the longitudinal centerline with right-angle offsets as required to approximately follow the perimeter of the area concerned.

Abrupt irregularities on F4 finish that are not parallel to the direction of flow and which are offset into the flow shall not exceed one-eighth of an inch. If any such irregularity exceeds the one-eighth inch limitation, the entire irregularity shall be completely eliminated by grinding on a bevel of 1:20 ratio of height to length.

16.6.19.3 Unformed Surfaces -

a. General - The classes of finish for unformed concrete surfaces are as follows:

Interior surfaces shall be sloped for drainage where shown on the Drawings or directed. Surfaces which will be exposed to the weather and which would normally be level, shall be sloped for drainage. Unless the use of other slopes or level surfaces is indicated on the Drawings or as directed, narrow surfaces, such as tops of walls, shall be sloped approximately three-eighths of an inch per foot of width; broader surfaces, such as top surfaces of nearly horizontal slabs, shall be sloped approximately one-fourth of an inch per foot.

b. Finish U1 (Screeded Finish) - Finish U1 applies to unformed surfaces that will be covered by fill material or by concrete. Finish U1 is also used as the first stage of Finishes U2 and U3. Finishing operations shall consist of sufficient leveling and screeding to produce even uniform surfaces. Surface irregularities, measured

as described in Section 16.6.22, shall not exceed three-eighths of an inch.

c. Finish U2 (Floated Finish) - Finish U2 applies to the unformed surfaces not permanently concealed by fill material or concrete, or not required to receive Finish U1 or U3. Finish U2 is also used as the second stage of Finish U3. Floating may be performed by use of hand- or power-driven equipment. Floating shall be started as soon as the screeded surface has stiffened sufficiently, and shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture.

Floating shall be continued until a small amount of mortar without excess water is brought to the surface, so as to permit effective troweling. The surface shall be broomed upon completion of troweling to provide a non-slip surface in walkways, stoops and aprons as directed by the Engineer.

Surface irregularities, measured as described in Section 16.6.22 shall not exceed one-fourth of an inch. Joints and edges shall be tooled where shown on the Drawings or directed.

d. Finish U3 (Troweled Finish) - Finish U3 applies to floors exposed to hydraulic flow.

When the floated surface has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be started. Steel troweling shall be performed with firm pressure so as to flatten the sandy texture of the floated surface and produce a dense, uniform surface free from blemishes and trowel marks. Except as hereinafter provided, surface irregularities, shall not exceed one-fourth of an inch. Abrupt irregularities on surfaces to receive a U3 finish shall be completely eliminated by grinding on a bevel of 1:20 ratio of height to length. Grinding to a depth in excess of one-fourth of an inch will not be permitted, and any irregularity requiring grinding in excess of this limit shall, in lieu of grinding, be excavated and removed to a sufficient depth below the finished grade, and the irregularity repaired in accordance with the provisions of Section 16.6.22, Repair of Concrete,

herein. If any gradual irregularity on the foregoing surface is greater than the specified one-fourth inch limitation, the irregularity shall be reduced by grinding so that it is within the specified limit. Grinding in excess of one-fourth of an inch will not be permitted and, instead, such irregularity shall be excavated and repaired to the required surface levels as required for abrupt irregularities. The slopes produced by grinding gradual irregularities, and the slopes of such irregularities that are steeper than the bevels specified for ground surfaces produced in eliminating abrupt irregularities, shall be reduced by grinding so that they conform with such bevels. Where depressions in the finished surfaces occur, the depressions shall be excavated, properly prepared, and brought to the required surface levels, in accordance with the provisions of Section 16.6.22, Repair of Concrete, herein. Irregularities to be repaired with concrete or epoxy-bonded concrete shall be sawcut 1 and ½ inches deep around the perimeter of the area. The saw cuts shall be normal to the surface to provide a sharp, square surface edge; and shall be parallel to the longitudinal centerline with right-angle offsets as required to approximately follow the perimeter of the area concerned. Abrupt irregularities that are not parallel to the direction of flow and which are offset into the flow shall not exceed one-eighth of an inch. If any such irregularity exceeds the one-eighth inch limitation, the entire irregularity shall be completely eliminated by grinding on a bevel of 1:20 ratio of height to length.

16.6.20 Protection - The Contractor shall protect all concrete against damage until final acceptance by the Engineer. Concrete shall not be loaded, forms and shoring shall not be removed, and backfill shall not be placed against concrete until the concrete has gained sufficient strength to safely support its weight and all imposed loads.

Fresh concrete shall be protected against erosion from rain, frost damage, contamination from foreign materials, and damage from foot traffic until the concrete has hardened. Methods of protection shall be subject to approval by the Engineer. When precipitation appears imminent, the Contractor shall immediately make ready at the placement site all materials which may be required for protection of concrete. The Engineer may delay placement of concrete until adequate provisions for protection against weather are made. Concrete curing membranes shall be kept intact, and other curing materials

and processes shall be maintained as necessary to assure continuous curing for the minimum specified curing time.

16.6.21 Curing -

16.6.21.1 General -

a. The Contractor shall furnish all materials and perform all work required for curing concrete.

b. Concrete shall be cured either by water curing or by the use of white wax-base curing compound except as otherwise provided below.

c. Surfaces of concrete that will remain prominently exposed and that will not be painted or stained shall be cured by the use of a clear, resin-base curing compound. Surfaces of concrete to be painted or stained shall be water cured or cured with polyethylene film.

d. Surfaces of construction joints shall be water cured or cured by covering with polyethylene film or cured by the use of white wax-base or white water-emulsified, resin-base curing compound. Immediately prior to placement of concrete or grout on or against these surfaces, concrete shall be prepared in accordance with Section 16.6.17, Preparations for Placing, herein.

e. Contraction joint surfaces and control joint surfaces shall be cured by the use of wax-base curing compound. All extraneous concrete accretions and other foreign materials shall be removed from the surfaces of contraction joints and control joints to provide a smooth, clean surface prior to application of the curing compound.

f. All concrete surfaces shall be treated as specified to prevent loss of moisture from the concrete until the required curing period has elapsed or until immediately prior to placement of other concrete or backfill against those surfaces. Only sufficient time to prepare construction joint surfaces and to bring them to a surface-dry condition shall be allowed between discontinuance of curing and placement of adjacent concrete.

g. As soon as unformed concrete surfaces have been finished, as specified, and have attained a dull appearance free from bleed water and moist sheen, they shall be treated as specified herein.

h. Forms shall be removed within 24 hours after the concrete has hardened. Where required, repair of all minor surface imperfections shall be made immediately after form removal. Minor surface repair shall be completed within 2 hours after form removal and shall be immediately followed by the initiation of curing by the applicable method specified herein. Concrete surfaces shall be kept continuously moist after form removal until initiation of curing.

16.6.21.2 Materials -

a. Materials used for curing shall meet the following requirements -

i. Water: Water used for curing shall meet the applicable requirements of Section 16.6.5.

ii. Curing compound: Wax-base shall conform to ASTM C309 Type 2, Class A.

Water-emulsified, resin-base shall conform to ASTM C309 Type 2, Class B.

Curing compounds shall be of uniform consistency and quality within each container and from shipment to shipment.

iii. Polyethylene film: Polyethylene film shall be white and shall conform to ASTM C171.

16.6.21.3 Sampling, Testing, and Certification – The Contractor shall submit to the Engineer, manufacturer's certifications and copies of all purchase orders for all curing compounds thirty (30) days prior to use.

16.6.21.4 Water Curing - Concrete cured with water shall be kept wet for at least 14 days from the time the concrete has attained sufficient set to prevent detrimental effects to the concrete surfaces. The concrete surfaces to be cured shall be kept wet

by covering them with water-saturated material; by using a system of perforated pipes, mechanical sprinklers, or porous hose; or by other methods which will keep all surfaces continuously (not periodically) wet. All curing methods are subject to approval by the Engineer.

16.6.21.5 Curing with Wax-base or Water-emulsified, Resin-base Compound -

a. Curing by wax-base or water-emulsified, resin-base curing compound shall be by application to designated concrete surfaces to provide a water-retaining film. The curing compound shall be reapplied as necessary to maintain a continuous, water-retaining film on the surface for 28 days. The curing compound shall be mixed thoroughly and spray applied to the concrete surfaces in one coat to provide a continuous, uniform film over the concrete. The coverage rate shall not exceed 125 square feet per gallon. On rough surfaces, the coverage rate shall be decreased as necessary to obtain the required continuous film. Special care shall be taken to ensure ample coverage with the compound at edges, corners, and rough surfaces; and to keep curing compound off waterstops and reinforcing bars. Equipment for applying curing compound and the method of application shall be in accordance with the provisions of chapter VI of the Eighth Edition - 1981 Revised Reprint of the Bureau of Reclamation "Concrete Manual".

b. In order to assure bond of curing compound, the Contractor shall, where and as directed by the Engineer, remove excessive form oil from concrete surfaces by washing with a solution of trisodium phosphate, followed by a thorough rinsing of the surfaces with clear water. The trisodium phosphate wash will be required when it is determined by the Engineer that the amount of form oil on the concrete will impair the bond of the curing compound or when surfaces are exposed to public view.

c. Where curing compound is to be applied, formed concrete surfaces shall be kept continuously moist by repeated light spraying with water until immediately prior to application of curing compound. Curing compound shall be applied as soon as the surface film

of moisture has disappeared, but while the concrete still has a damp appearance.

d. After application of the curing compound has been completed and the coating is dry to touch, all remaining required concrete repairs shall be performed without delay in accordance with Section 16.6.22, Repair of Concrete, herein. Completed repairs shall be moistened and coated with curing compound in accordance with the foregoing requirements.

16.6.21.6 Curing with Polyethylene Film - Curing by this method shall be by completely covering the designated concrete surfaces with polyethylene film to provide an airtight, water-retaining film over the entire concrete surface for at least 14 days. As soon as the concrete has hardened sufficiently to prevent damage, all surfaces shall be thoroughly moistened by spraying them lightly with water and then covering them completely with the polyethylene film. Edges of the polyethylene shall be lapped to effect a seal to adjacent strips and, at the extreme edge of the curing area, held tightly against the concrete surface. The polyethylene film shall be secured adequately to withstand wind and to prevent circulation of air inside the curing film.

16.6.21.7 Protection of Curing Membranes -

a. Curing compound membranes shall be maintained to provide a moisture-proof membrane for curing concrete for the minimum period specified. Curing compound that is damaged, or that peels from concrete surfaces within 28 days after application, shall be repaired without delay by moistening the concrete and applying additional compound in a manner satisfactory to the Engineer.

b. Polyethylene film curing shall be sustained for at least 14 days. The polyethylene film shall be protected as necessary to keep it intact, and the concrete surface shall be kept moist for the full curing period.

c. Where foot traffic or other construction activity is necessary on concrete being cured by curing compound or polyethylene film, the curing membrane shall be protected by covering with sand or earth not less than 1 inch thick, with plywood, or by other effective means

approved by the Engineer. Protective covering shall not be placed on curing compound until the compound is dry. The Contractor shall remove protective coverings before final acceptance of the work.

16.6.22 Repair of Concrete - Concrete shall be repaired in accordance with this Section and the Bureau of Reclamation "Standard Specifications for Repair of Concrete", dated January 4, 1982, or as directed by the Engineer.

Minor formed surface repairs, such as burlap sack rubbing or surface grinding, shall be completed within 2 hours after form removal. Dry-pack, concrete placement less than 10 inches thick, and Portland cement mortar repairs shall be completed within 7 days of the original concrete placement or shall utilize approved epoxy-resin bonding systems. Repairs involving epoxy-resin bonding systems shall be performed after 7 days and before 60 days from the original placement. Concrete replacement over 10 inches thick and all other repairs shall be completed within 60 days after the original placement.

Recesses resulting from removal of tie rods shall be filled with dry-pack or other approved material unless the recesses are later to be covered by concrete; or are later to be covered by fill material and are above the maximum water table elevation.

When concrete surfaces are repaired with epoxy-bonded epoxy mortar, the surfaces of the finished epoxy mortar shall, in areas visible to the public, be lightly ground or otherwise prepared to eliminate gloss and produce a surface color and texture that closely matches the surrounding concrete surfaces.

The Contractor shall submit samples of epoxy-bonding agent and graded sand for use in mix design of epoxy mortar in accordance with the Bureau of Reclamation "Standard Specifications for Repair of Concrete", dated January 4, 1982.

Surface holes larger than 0.5 inch in width or deeper than 0.25 inch shall be repaired using Portland cement mortar within 7 days of the original concrete placement.

16.6.23 Slush Grout, Dental and Backfill Concrete - Slush grout, dental concrete or backfill concrete shall be used in the Dam Embankment Core (dam zone constructed using Type 1 Embankment Material) foundation areas on the abutments where fractured and jointed rock are exposed, as well as in depressions or openings.

Furthermore, depending upon the condition of the exposed foundation excavations and the sizes of fractures in the abutment rock beneath the upstream shell zone and downstream shell zone, remedial measures such as

filling the fractures and joints with slush grout or dental concrete shall be taken to reduce seepage and to avoid piping in the embankment material. The need for remedial action and the type of remedial measure will be determined by the Engineer and DSOD representatives.

Dental concrete is for filling the voids in the foundation areas on the abutments where fractured and jointed rock is exposed, as well as in depressions or openings. Slush grout should be used to fill narrow cracks in the foundation areas on the abutments. Backfill concrete is for backfilling the overexcavation underneath any concrete structure and should have the same compressive strength as the concrete to be used for the construction of the structure that will be constructed on top of the backfill concrete.

Finished dental concrete should have a roughened, broom finish for satisfactory bonding of fill to concrete. Dental concrete should be cured by water or an approved curing compound for seven (7) days or covered by earth fill. However, earth fill placement may not be permitted over dental concrete for a minimum of 72 hours after concrete placement to allow concrete time to develop sufficient strength to withstand stress caused by placing earth fill. Inadequate curing may result in the concrete cracking.

Slush grout is a neat cement or a sand-cement slurry that is applied to cracks in the foundation. Cracks or joints are filled with grout rather than spreading grout on the surface. Slush grout should be used to fill narrow surface cracks and not used to cover areas of the foundation. Slush grout consists of cement, water and sand. To provide adequate penetration of the crack, the maximum particle size in the slush grout mixture should be no greater than one-third the crack width. Generally, neat cement grout shall be used. The consistency of the slush grout mix may vary from a very thin mix to mortar as required to penetrate the crack. The grout shall be mixed with a mechanical or centrifugal mixer, and the grout should be used within thirty (30) minutes after mixing. Cement type should be that specified for structural concrete. Sand and water quality should be equal to that required for structural concrete.

After cleaning the cracks, all cracks should be wetted before placing slush grout. Slush grout may be applied by brooming over the surfaces containing closely spaced cracks or by troweling, pouring, rodding, or funneling into individual cracks. Slush grout is best applied just before material placement so that cracking will not occur during compaction.

Any dental concrete used within the Dam Embankment Core footprint shall be Class B concrete as defined in Section 16.6.10. Any lean concrete used underneath the stilling basin shall be Class B Concrete as defined in Section 16.6.10.

Any backfill concrete used for backfilling the overexcavation underneath any structure should have the same compressive strength as the concrete to be used for the construction of the structure that will be constructed on top of the backfill concrete. Backfill concrete may not be measured unless authorized by the Engineer.

16.7 Concrete Placement Drawings - The Contractor shall prepare and submit drawings showing the individual concrete placements to the Engineer twenty-one (21) days prior to placing concrete.

A concrete placement is defined as a portion of concrete work placed in one continuous operation between given lines and construction joints.

The placement drawings shall show locations, dimensions, blockouts, openings, waterstops, and details of all structural items embedded in or associated with the lift, except reinforcing steel.

Related Sections -

16.2 Concrete Formwork
16.3 Concrete Reinforcement
16.4 Waterstops
16.5 Joints and Edges in Concrete
16.6 Cast-In-Place Concrete
16.8 Weepholes

16.7.1 Contractor Submittals - All submittals for concrete placement drawings shall be provided in accordance with the requirements of this Section. The drawings shall be submitted so that they are received by the Engineer at least 21 calendar days before the scheduled time of the concrete placement indicated on the drawings.

The Contractor shall submit 3 prints of each placement drawing. The overall size of the drawings shall not exceed 21- by 36- inches unless otherwise approved by the Engineer.

The drawings shall have a title block in the lower right corner which shall show the Contractor's name, project name, a description of the placement, and an appropriate drawing number.

The Contractor shall also prepare a list of reference drawings from which the details shown on the placement drawing were obtained. References to the related reinforcing steel drawings shall also be shown on the placement drawings.

All costs associated with this portion of the work shall be included in the bid prices for concrete construction.

16.8 Weepholes - Weepholes shall be constructed in accordance with the drawings and at locations directed by the Engineer. All weepholes shall be 3 inches in diameter unless noted otherwise on the drawings.

Weepholes may be formed by removable round wooden dowels, Schedule 40 PVC Pipe or greater, or by other methods acceptable to the Engineer. Weepholes shall be constructed with 3 inches of clearance from rebar.

All weepholes shall have a rodent screen consisting of 1/4-inch mesh, 16-gauge galvanized hardware cloth securely and permanently attached over the drain opening in a manner approved by the Engineer.

Filter material for the weepholes shall be one inch (1") nominal size crushed rock. Crushed rock shall be the product of crushing rock or gravel. The portion of the material that is retained on a 3/8 inch sieve shall contain at least 50 percent (50%) of particles having three or more fractured faces. Not over 5 percent (5%) shall be pieces that show no such faces resulting from crushing. Of that portion which passes through 3/8 inch sieve but retained on the No. 4 sieve, not more than 10 percent (10%) shall be gravel particles. The one inch (1") crushed rock shall conform to the gradation and ASTM C131 Test Grading listed below:

| Sieve Size | Percent Passing |
|---|---|
| 1-½ in. | 100 |
| 1 in. | 90-100 |
| 3/4 in. | 30-60 |
| 1/2 in. | 0-20 |
| No. 4. | 0-5 |
| ASTM C131 Test Grading | A |

Sieve analyses of this filter material shall be performed in accordance with California Test 202. All percentage referred in the table above shall be determined by weight.

Filter material shall be wrapped in a single layer of filter fabric as shown on the drawings or approved by the Engineer. Filter fabric shall conform to the specification given below.

Filter fabric shall be manufactured from polyester, nylon or polypropylene material, or any combination thereof. The fabric shall be permeable, non-woven, shall not act as a wicking agent, and shall conform to the following:

| Specification | Requirements |
|---|---|
| Weight, grams per square meter, min.<br>ASTM Designation: D3776 | 135 |
| Grab tensile strength<br>(25-mm grip), kilonewtons, min. in each direction<br>ASTM Designation: D4632 | 0.40 |
| Elongation at break, percent min.<br>ASTM Designation: D4632 | 30 |
| Toughness, kilonewtons, min.<br>(Percent elongation x grab tensile strength) | 26 |
| Permittivity, l/sec., min.<br>ASTM Designation: D4491 | 0.5 |

If filter fabric is to be exposed for more than 72 hours, all fabric of that type shall be treated with ultraviolet ray (UV) protection. The treated fabric shall provide a minimum of 70 percent (70%) breaking strength retention after 500 hours exposure when tested in conformance with the requirements in ASTM Designation: D4355.

Filter fabric, not treated with UV protection, which is exposed for more than 72 hours shall be removed and replaced at the expense of the Contractor. The replacement fabric either shall be treated with UV protection or shall not be exposed for more than 72 hours.

Filter fabric shall be furnished in protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. The fabric shall also be ultraviolet stabilized.

The fabric shall be placed in the manner and at the locations shown on the drawings. The surface to receive the fabric shall be prepared to a smooth condition free of obstructions and debris.

The fabric shall be covered within 72 hours of its placement. Should the fabric be damaged during construction, the torn or punctured section shall be repaired or replaced as directed by the Engineer.

No separate payment will be made for the installation of the weephole, hardware cloth, filter material or filter fabric. Exception to this is the drilled weepholes on the spillway channel as discussed in Section 21.5.

16.9 Class "A" Concrete, Pipe Cradle - The contract item Class "A" Concrete, Pipe Cradle covers the concrete incorporated in the construction of the pipe cradle. Included in this pay item is all joint filler material, reinforcement steel and dowels, exclusive of Earthwork.

16.10 Class "A" Concrete, Intake Structure - The contract item Class "A" Concrete, Intake Structure includes the complete construction of the intake structure and the stairs from the intake

structure to the access road. Included in this pay item are all waterstops, earthwork and reinforcement steel, exclusive of the steel grate for intake structure.

16.11 Class "A" Concrete, Stilling Basin Structure - The contract item Class "A" Concrete, stilling basin structure covers the concrete to be used in the construction of the stilling basin structure which includes the training wall section and spillway chute concrete section including baffle blocks, and chute blocks. Included in this pay item is all the reinforcing steel dowels and waterstops as shown on the drawings, exclusive of the Earthwork.

16.12 Class "A" Concrete, Outlet Headwall - The contract item Class "A" Concrete, Outlet Headwall covers the concrete to be used in the construction of the outlet headwall. Included in the pay item is all reinforcing steel, exclusive of earthwork.

16.13 Class "B" Concrete, Cutoff Wall - The contract item Class "B" Concrete, Cutoff Wall covers the construction of all cutoff walls (6 feet and 9 feet deep cutoff walls) shown on the drawings. Included in the pay item is all earthwork and reinforcing steel.

16.14 Class "B" Concrete, Sill at Spillway Crest - The contract item Concrete Sill at Spillway Crest includes construction of a 3-foot deep cutoff wall as shown on the plan and associated excavation necessary for installing this 3-foot deep cutoff wall. Class "B" Concrete shall be used for the construction of this sill structure. Included in this pay item is all the required reinforcing steel.

16.15 Class "B" Concrete, V-Ditch - The contract item Class "B" Concrete, V-Ditch shall include the construction of reinforced concrete V-ditch along the access road as shown on the drawings and the construction of reinforced concrete V-Ditch along the dam groin with anchors as shown on the drawings. The alignment of the V-ditch along the access road may need to be modified as directed by the Engineer to provide a smooth flow condition (i.e. reduce abrupt changes to flow line). Included in the pay item is all earthwork and reinforcing steel.

16.16 Class "B" Concrete, Miscellaneous - The contract item Class "B" Concrete, Miscellaneous includes the complete construction of spillway slab/apron, between the spillway sill and the west access road and any other concrete not specified. Included in the pay item is all earthwork and reinforcing steel required.

This reach is roughly between Station 4+32 and Station 4+93 along the spillway profile. The spillway slab shall cover the bottom area of the spillway channel between the upstream edge of the concrete sill at the spillway crest, the north edge of the west access road and the toe of the sideslopes of the spillway channel. This spillway slab shall have a thickness of 6 inches and reinforced with two-way #4 rebar placed at 12-inch spacing from center to center in both directions. The rebar shall be placed at about mid-depth of the slab and shall have a minimum of 2 inches of concrete cover. The finished surface of this slab shall achieve the elevation shown for the bottom of the spillway channel in the profile on Drawing No. 6-358, Sheet No. 15.

16.17 Slush Grout, Dental and Backfill Concrete – The contract item Slush Grout, Dental and Backfill Concrete covers slush grout, dental and backfill concrete necessary to prepare the abutment foundation section associated with the core of the dam and/or abutment foundation associated with the upstream shell zone and downstream shell zone of the dam. Included in the pay items is all the preparation and placement as specified.

16.18 Measurement - Measurement for payment for the contract items Class "A" Concrete, Pipe Cradle; Class "A" Concrete, Intake Structure; Class "A" Concrete, Stilling Basin Structure; and Class "A" Concrete, Outlet Headwall shall be the number of cubic yards placed as specified, measured to the neat lines as shown on the drawings.

All materials shall be measured in accordance with the "Standard Specification for Ready-Mixed Concrete", ASTM C94.

Measurement for payment for the contract items Class "B" Concrete, Cutoff Wall Class "B" Concrete, Sill at Spillway Crest; Class "B" Concrete, V-Ditch; and Class "B" Concrete Miscellaneous shall be the number of cubic yards placed, measured as specified, to the neat lines shown on the drawings.

Measurement for payment for the contract item Slush Grout, Dental and Backfill Concrete shall be the number of cubic yards placed as specified or as directed by the Engineer measured at the mixer. The quantity "measured at the mixer" shall be the converted volume in cubic yards based on computing the total batch weight in pounds divided by the concrete density in pounds per cubic foot. The total batch weight is calculated as the sum of all materials, including water, entering the batch. The concrete density is determined under California Test 518.

Backfill concrete used for backfilling excavation beyond the pay limits shown on the drawings and/or for backfilling overexcavation for the convenience of the Contractor will not be measured for payment.

No measurement or payment will be made for dowels, tie bars, tie wires, blocks, chairs and other accessories.

16.19 Payment - The contract prices paid for the various Concrete items shall include full compensation for all costs incurred under this section.

## SECTION 17 - CONCRETE PIPE

17.1 Description - This section covers the contract item Reinforced Concrete Pressure Pipe as required for the work.

17.2 General Pipe Requirement - Pipe materials, manufacture and quality, shall conform to ASTM Designation: C76 and C655 and shall be manufactured in accordance with AWWA C302. The Engineer shall be furnished with a "Certificate of Compliance" signed by the manufacturer of the pipe certifying that the pipe conforms to the ASTM and AWWA requirements. All pipe and pipe material supplied by the Contractor shall be new.

The general overall outlet pipe details and specifications from the pipe manufacturer need to be reviewed by the Engineer and DSOD prior to installation. This needs to include strength testing and details about the seal and joint articulation characteristics.

The District will also require the D-load bearing strength test conforming to ASTM C497. The test shall be performed in the presence of the Engineer. Pipe to be D-load tested shall be selected at random by the Engineer at the point of manufacture. One pipe will be selected for each lot, or fraction thereof, of the pipe to be furnished for the

project. The Engineer will make the acceptance decision which will be based on the D-load bearing test results, inspection of the pipe manufacture, inspection of the completed pipe and certificate of compliance from the manufacturer.

Pipe shall be laid in a trench free of ponded water. Pipe will be laid to the lines and grades shown on the drawings. Pipe will be inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be subject to rejection. Any corrective work shall be approved by the Engineer and shall be at no additional cost. Any pipe which is not in true alignment or shows any undue settlement after laying shall be taken up and re-laid at the Contractor's expense. Pipe sections shall be laid and jointed in a manner acceptable to the Engineer.

The pipe manufacturer shall provide a laying schedule to the Engineer twenty-one (21) days prior to any manufacture of the pipe and pipe with special ends shall be clearly marked for proper installation. This laying schedule shall be approved by the Engineer prior to fabrication. The laying schedule shall include pipe and joint details and specifications of any materials such as joint sealer compounds, gaskets and joint soap to be used on the project.

17.3 42-Inch Reinforced Concrete Pressure Pipe (RCPP), 4000D - The contract item 42-Inch Reinforced Concrete Pressure Pipe (RCPP), 4000D includes the furnishing and installing of the pipe as specified. A gasketed joint as shown on the drawings and shall conform to AWWA Specification C302 non-cylinder pressure pipe. The pipe shall be fabricated to meet the design requirements of ASTM C76, Wall B. Shorter lengths and specials will be required. The end sections of pipe to be installed in the concrete structures will be "plain ends".

Prior to excavating the trench for the 42-inch Reinforced Concrete Pressure Pipe (RCPP), 4000D, the embankment shall be brought to Elevation 353. The trench shall have width and sideslopes as shown on the drawings to facilitate the forming needed to construct the cradle.

Concrete for the cradle shall be placed in two segments. The first segment will be placed against the undisturbed trench bottom as directed by the Engineer. While placing the pipe to lines and grade it will be supported by means recommended by the manufacture. The remaining concrete cradle will be formed and placed. After pipe is laid and complete cradle placed, the remainder of the trench shall be backfilled with dam embankment material to the specifications for Embankment.

The pipe shall be set to the specified line and grade and temporarily supported by the means recommended by the manufacturer and approved by the Engineer. Concrete blocks and wedges used to temporarily support the pipe during placement of the cradle shall be a class of concrete equal to or stronger than the concrete used to construct the cradle.

Bell and spigot pipe shall be laid with the bells facing upstream as shown on the drawings. The first and last section of pipe will be formed integral with the concrete outlet head wall and the inlet head wall, respectively.

Just before each joint is connected, the connecting surface of the bell and spigot shall be thoroughly cleaned and dried. All concrete "burrs" shall be removed. The gasket and the inside surface of the bell shall be lubricated with a light film of soft vegetable soap compound (flax soap). The gasket shall be stretched uniformly as it is placed in the spigot groove to ensure a uniformity around the circumference of the pipe.

The joint shall be connected by means of a pulling or jacking force so applied to the pipe that the spigot enters squarely into the bell in accordance with the manufacturer's instructions.

When the spigot has been seated to within 0.5 inch of its final position, the position of the gasket in the joint shall be checked around the entire circumference of the pipe by means of a metal feeler gauge. If the gasket is found to be displaced, the joint shall be disengaged and properly reconnected. After the position of the gasket has been checked, the spigot shall be completely pulled into the bell and the section of pipe shall be adjusted to line and grade. The remaining joint gaps will be filled with joint sealing compound recommended and supplied by the manufacturer.

Joint sealing compound shall conform to the requirements of Material Specification 536 and as recommended by the pipe manufacturer. Sealing Compound for Joints in Concrete Pipe shall conform to pipe manufacturer's recommendations.

Before the placement of the second stage of the cradle, the exterior annular space between the ends of the pipe sections shall be cleaned and completely filled with joint sealing compound. Before the compound is applied, the surface against which it is to be placed shall be cleaned of all dust, lubricant, and other substances that would interfere with a bond between the compound and the pipe. If recommended by the manufacturer of the compound, the concrete surface shall be coated with a primer in accordance with the manufacturer's recommendations. Primers shall be applied to the concrete surface only and shall not come in contact with the gasket or gasket sealing surface. Unless the compound or primer is specifically recommended for use on moist concrete, the surface shall be dry when the compound or primer is applied.

The joint sealing compound shall be allowed to cure until it is sufficiently firm to prevent the entry of objectionable materials.

17.4 Video Inspection – All concrete pipe shall be videotaped prior to final inspection. Copies of the videotapes shall be provided to the Engineer. For pipe placed within roadway area, video inspection shall be performed and the results approved by the Engineer prior to paving.

17.5 Measurement - Measurement for payment of the contract item 42-Inch Reinforced Concrete Pressure Pipe (RCPP), 4000D will be the number of lineal feet of pipe installed as specified measured along the centerline of the pipe in place. No measurement will be made for the joint sealing compound or gasket used.

17.6 Payment - The contract price paid for the 42-Inch Reinforced Concrete Pressure Pipe (RCPP), 4000D shall include full compensation for all costs incurred under this section. No separate payment will be paid for the joint sealing compound used in the construction.

## SECTION 18 AND SECTION 19 – NOT USED

## SECTION 20 - FENCES AND GATES

20.1 Description - This section covers the contract items 6-Foot Chain Link Fence; and 14-Foot Double Drive Gates.

20.2 6-Foot Chain Link Fence - The contract item 6-Foot Chain Link Fence includes furnishing and installing the material required for this portion of the work as shown on the drawings and as directed by the Engineer. Included in this item is all hardware parts, posts, fittings and necessary excavation to install posts, including coring at some places where rock exists. Also included in this item of work will be the removal and relocation, if required, of chain link fence as noted on the drawings and as directed by the Engineer.

All materials shall be new except that specified for removal and relocation and shall conform to Section 206-6 of the Standard Specifications and the drawings, with installation in conformance with Section 304-3.2. Materials salvaged shall be subject to the Engineer's approval prior to reinstallation. All posts shall be set in commercial plant quality, 4 sack per cubic yard concrete.

20.3 14-Foot Double Drive Gates - The contract item 14-Foot Double Drive Gates includes furnishing and installing the various gates as shown on the drawings, complete with all gate posts set in concrete and in conformance with Section 304-3.3 of the Standard Specifications. Padlocks are not included in this item. On completion, gates shall operate freely without wedging or binding.

20.4 Measurement - Measurement for payment for the contract item 6-Foot Chain Link Fence will be the number of lineal feet of new and relocated fence installed measured along the top of the fence parallel to the ground.

Measurement for payment for the contract item 14-Foot Double Drive Gate will be the number of pairs installed. Excavation and concrete required for fence or gate posts will not be measured for payment.

20.5 Payment - The contract price paid for 6-Foot Chain Link Fence; and 14-Foot Double Drive Gates shall include full compensation for all costs incurred under this section.

## SECTION 21 - MISCELLANEOUS

21.1 Description - This section covers the Wall Anchors and Slab Anchors as shown on the drawings and the contract items Steel Grates for Intake Structure; 24-Inch Side Inlet Drain Pipe; Weep Holes on Spillway Channel; and Leach Field Drains as shown on the drawings.

21.2 Miscellaneous Iron and Steel - The Miscellaneous Iron and Steel covers all ferrous metal used in the various hydraulic structures. Materials, parts and fittings shall conform with the following:

(a) All Miscellaneous Metal - Per ASTM Designation: A36.

(b) Galvanizing - All exposed ferrous metal shall be galvanized per Section 210-3 of the Standard Specifications.

21.3 Wall Anchors and Slab Anchors – This work includes furnishing all the materials for Wall Anchors and Slab Anchors, as well as installation of any anchors as shown on the drawings.

Depending upon the exposed condition of the spillway excavation and stilling basin excavation, the Engineer will determine the need and the details for the Wall Anchors and Slab anchors at the locations shown on the drawings. If anchors are needed, the details for anchors, such as shape, length, diameter, and spacing of anchors along with the design details, instructions for installation and testing of the slab anchors and wall anchors will be provided by the Engineer.

Engineer will submit the design details of these anchors as well as the specifications for installation and testing of these anchors to the DSOD for review and approval. Engineer will notify the DSOD regarding the schedule for construction of these anchors such that DSOD's representative can inspect the installation and testing of these anchors. Contractor shall notify the Engineer a minimum of 72 hours prior to start of the installation of these anchors.

21.4 Steel Grates for Intake Structure – The contract item Steel Grates for Intake Structure includes furnishing all the materials for the frames, supports, anchors, grates, etc., as well as galvanizing and the installation of the steel grates required for the intake structure as shown on the drawings. Use a stiffener with smaller width but same thickness. Stiffeners may be cut to be flush with the beam flange.

21.5 24-Inch Side Inlet Drain Pipe - The contract item 24-Inch Side Inlet Drain Pipe includes the complete construction of the 24-Inch Reinforced Concrete Pipe (RCP), Class IV drop inlet and junction structure JS 233. Included in the pay item is all earthwork rock, grout, concrete collar and reinforcing steel required for these structures. Also included in this item is the rock energy dissipater as shown on the drawings.

21.6 Weep Holes on Spillway Channel - The contract item Weep Holes on Spillway Channel includes drilling 16-foot-long, six-inch-diameter weep holes approximately one foot above the spillway bottom to serve as drains. The invert of the weep holes should be at a height of one foot above the spillway bottom and should have a three percent (3%) downward slope toward the spillway. Included in this pay item is all the required 1/4 inch mesh galvanized hardware cloth which should be securely placed to protect the weep holes.

21.7 Leach Field Drains - The contract item Leach Field Drains includes furnishing and placing the perforated 8-inch-diameter PVC Schedule 80 drain pipe to drain water from the stilling basin as well as furnishing and placing perforated 8-inch-diameter PVC Schedule 80 pipe needed for the leach field drain as shown on the drawings. This contract item also includes all the filter fabric, all Class 2 permeable material as defined in the State of California Department of Transportation, Standard Specifications or approved equivalent, all earthwork, all pipe fittings and glue necessary for the complete installation.

21.8 Measurement - Payment for any and all material and labor associated with furnishing the Wall Anchors and Slab Anchors will be made under the contract item Extra Directed Work. Full

compensation for furnishing the Wall Anchors and Slab Anchors shall be paid pursuant to Section 2.07 of the General Provisions.

No measurement for payment will be made for the lump sum contract item Steel Grates for Intake Structure.

No measurement for payment will be made for the lump sum contract item 24-Inch Side Inlet Drain Pipe.

Measurement for payment for the contract item Weep Holes on Spillway Channel will be the total lineal footage drilled as shown on the drawings.

No measurement will be made for payment for the lump sum contract item Leach Field Drains.

21.9 Payment - The contract prices paid for Steel Grates for Intake Structure; 24-Inch Side Inlet Drain Pipe; Weep Holes on Spillway Channel; and Leach Field Drains shall include full compensation for all costs incurred under this section.

## SECTION 22 THROUGH SECTION 25 – NOT USED

## SECTION 26 - STONEWORK

26.1 Description - This section covers the contract items Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/2-Ton Class; Rock Slope Protection, 1/4-Ton Class; Rock Slope Protection, Light Class; Crushed Rock; Filter Blanket, No. 2 Backing Class; Rock Slope Protection Fabric; Concrete Grout for Grouted Rock Riprap and Grouted No. 2 Backing Class; and Filter Diaphragm Material.

26.2 General - All rock materials shall meet the quality requirements of Section 26.3.

Rock materials shall be blocky and predominantly angular in shape. Not more than 25% of the rock shall have a length more than 2.5 times the breadth or thickness. No rock shall have a length exceeding 3.0 times its breadth or thickness. All oversize rocks, as determined by the Engineer, shall be removed.

Rock materials shall be placed on a firm dry foundation in conformance with method described in Section 26.3, however, additional placement effort shall be required to meet the lines and grades as shown on the drawings and to fill and chink oversize voids with selected rock to establish a stable interlock. Chinking of voids will not be required for rock specified to be concreted.

Permeable materials such as filter blankets shall be consolidated and the surface trimmed to final grade as directed by the Engineer.

26.3 Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/2-Ton Class; Rock Slope Protection, 1/4-Ton Class; and Rock Slope Protection, Light Class - The contract items Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/2-Ton Class; Rock Slope Protection 1/4-Ton Class; and Rock Slope Protection, Light Class covers the rock furnished and placed as shown on the drawings as specified. These items also include all necessary excavation necessary for placing the rock slope protection as shown on the drawings.

Rock slope protection shall be placed in conformance with method of placement described below:

Trenches shall be excavated as directed by the Engineer or DSOD representatives to allow the placement of rock slope protection as shown on the plans. It will be necessary to slope the edges of trenches to allow for proper installation of protection fabric and filter blanket underneath the rock slope protection. Rocks shall be so placed as to provide a minimum of voids, and the larger rocks shall be placed in the toe course and on the outside surface of the slope protection. The rock may be placed by dumping and may be spread in layers by bulldozers or other suitable equipment. Local surface irregularities of the slope protection shall not vary from the planned slopes by more than one foot measured at right angles to the slope.

The individual classes of rocks used in rock slope protection shall conform to the following.

GRADING OF ROCK SLOPE PROTECTION

| | Percentage Larger Than* | | | |
|---|---|---|---|---|
| | Classes | | | |
| **Rock Size** | **1 T** | **1/2 T** | **1/4 T** | **Light** |
| 2 Ton | 0-5 | - | - | - |
| 1 Ton | 50-100 | 0-5 | - | - |
| 1/2 Ton | - | 50-100 | 0-5 | - |
| 1/4 Ton | 95-100 | - | 50-100 | 0-5 |
| 200 lb. | - | 95-100 | - | 50-100 |
| 75 lb. | - | - | 95-100 | - |
| 25 lb. | - | - | - | 95-100 |
| 5 lb. | - | - | - | - |
| 1 lb. | - | - | - | - |

*The amount of material smaller than the smallest rock size listed in the above tables for any class of rock slope protection shall not exceed the percentage limit listed in the above tables determined on a weight basis. Compliance with the percentage limit shown in the above tables for all other rock sizes of the individual pieces of any class of rock slope protection shall be determined by the ratio of the number of individual pieces larger than the specified rock size to the total number of individual pieces larger than the smallest rock size listed in the above tables for that class.

The material shall also conform to the following quality requirements:

| Test | California Test | Requirement |
|---|---|---|
| Apparent Specific Gravity | 206 | 2.5 min. |
| Absorption | 206 | 4.2% max.* |
| Durability Index | 229 | 52 min.* |

* Based on the formula listed below, absorption may exceed 4.2 percent if DAR is greater than 10. Durability Index may be less than 52 if DAR is greater than 24.

$$\frac{\text{Coarse Durability Index}}{\text{\% Absorption} + 1} = \text{Durability Absorption Ratio (DAR)}$$

Rocks, when conforming to the provisions may be obtained from rock excavation of abutment and spillway excavation being performed under the provisions of the contract.

26.4 Crushed Rock - The contract item Crushed Rock includes furnishing and placing such material as shown on the drawings. Crushed rock shall be 3/4 inch maximum size. Crushed rock shall be the product of crushing rock or gravel. The portion of the material that is retained on a 3/8 inch sieve shall contain at least fifty percent (50%) of particles having three or more fractured faces. Not over five percent (5%) shall be pieces that show no such faces resulting from crushing. Of that portion which passes through 3/8 inch sieve but retained on the No. 4 sieve, not more than ten percent (10%) shall be gravel particles. The 3/4 inch crushed rock shall conform to the gradation and ASTM C131 Test Grading listed below:

| Sieve Size | Percent Passing |
|---|---|
| 1 inch | 100 |
| 3/4 inch | 90-100 |
| 1/2 inch | 30-60 |
| 3/8 inch | 0-20 |
| No. 4 | 0-5 |
| ASTM C131 Test Grading | B |

Sieve analysis of this filter material shall be performed in accordance with California Test 202. All percentage referred in the table above shall be determined by weight.

26.5 Filter Blanket, No. 2 Backing Class - The contract item Filter Blanket, No. 2 Backing Class covers the filter blanket installed under the Rock Slope Protection, the No. 2 Backing Class cutoff walls and the Filter Blanket, No. 2 Backing Class to be grouted under the access road as shown on the plan.

The filter blanket shall be permeable material and shall be placed to the lines and grades as shown on the plans or as directed by the Engineer. The gradation requirements for No. 2 Backing material is given in the Table below. Filter Blanket shall be placed on firm surface. Soft, spongy material shall be removed and replaced with acceptable compacted material as directed by the Engineer. The cost of foundation preparation shall be included in the price bid for excavation and no additional allowance will be made for such work. The permeable material

shall be consolidated and the surface trimmed to final grade as shown on the drawings or as directed by the Engineer.

No. 2 Backing Material Gradation Requirements

| Rock Size | Percentage Larger than Rock Size |
|---|---|
| 75 lb. | 0-5 |
| 25 lb. | 25-75 |
| 5 lb. | 90-100 |

26.6 Rock Slope Protection Fabric – The contract item Rock Slope Protection Fabric placed beneath rock shall be manufactured from polyester, nylon, polypropylene or polyvinylidene material or any combination thereof. Rock Slope Protection Fabric shall be treated with ultraviolet ray (UV) protection. The UV treated fabric shall provide a minimum of seventy percent (70%) breaking strength retention after 500 hours exposure when tested in conformance with the requirements in ASTM Designation: D4355. Unless otherwise specified, the Contractor shall submit samples of the treated fabric to the Laboratory specified by the Engineer at least twenty-one (21) days prior to use. Rock Slope Protection Fabric shall be non-woven type fabric.

Rock Slope Protection Fabric shall conform to the following specification. A nine-inch minimum layer of backing material shall be placed over the fabric prior to placing rock unless otherwise shown on the plans. Rock Slope Protection Fabric should be anchored at the top and bottom using anchor trench as directed by the engineer. General guidelines for key trenches and rock riprap on the upstream and downstream slopes of the dam embankment are shown on Sheet 22.

| Specification | Requirements |
|---|---|
| Weight, grams per square meter (minimum)<br>ASTM Designation: D3776 | 340 |
| Grab tensile strength<br>(25-mm grip), kilonewtons (minimum) in each direction<br>ASTM Designation: D4632 | 0.89 |
| Elongation at break, percent (minimum)<br>ASTM Designation: D4632 | 50 |
| Permittivity, l/sec. (minimum)<br>ASTM Designation: D4491 | 0.7 |

Rock Slope Protection Fabric shall be placed prior to placing rock slope protection, when the fabric is shown on the plans, or specified in the special provisions, or directed by the Engineer.

Prior to placing Rock Slope Protection Fabric, the surfaces upon or against which rock slope protection fabric is to be placed, shall be free of loose or extraneous material and sharp objects that may damage the fabric during installation.

Rock Slope Protection Fabric shall be handled and placed in conformance with the manufacturer's recommendations and as directed by the Engineer. Rock Slope Protection Fabric shall be placed loosely upon or against the surface to receive the fabric so that the fabric conforms to the surface without damage when the cover material is placed.

Rock Slope Protection Fabrics shall be joined, at the option of the Contractor, either with overlapped joints or stitched seams.

When fabric is joined with overlapped joints, adjacent borders of the finished fabric shall be overlapped not less than 24 inches. The fabric shall be placed such that the fabric being placed shall overlap the adjacent section of fabric in the direction the cover material is being placed.

When the fabric is joined by stitched seams, the fabric shall be stitched with yarn of a contrasting color. The size and composition of the yarn shall be as recommended by the fabric manufacturer. The number of stitches per inch of seam shall be approximately 5 to 7. The strength of stitched seams shall be the same as specified for the fabric, except when stitched seams are oriented up and down a slope, the strength shall be a minimum of eighty percent (80%) of that specified for the fabric.

Equipment or vehicles shall not be operated or driven directly on the Rock Slope Protection Fabric.

Rock Slope Protection Fabric damaged during placement shall be replaced or repaired, as directed by the Engineer, by the Contractor at the Contractor's expense. Fabric damaged beyond repair, as determined by the Engineer, shall be replaced. Repairing damaged fabric shall consist of placing new fabric over the damaged area. The minimum fabric overlap from the edge of the damaged area shall be 3 feet for overlap joints. If the new fabric joints at the damaged areas are joined by stitching, the stitched joints shall conform to the requirements specified above.

26.7 Concrete Grout for Grouted Rock Riprap and Grouted No. 2 Backing Class - The contract item Concrete Grout for Grouted Rock Riprap and Grouted No. 2 Backing Class, covers the furnishing and placing of the concrete grout. The concrete grout is to fill the voids of the rock riprap and the Filter Blanket No. 2 Backing Class as shown on the drawings the Concrete Grout shall be Class C. Further requirements for Class C Concrete are found in Section 16 of this document.

26.8 Filter Diaphragm Material - The contract item Filter Diaphragm Material includes furnishing and placing such material as shown on the drawings. Filter Diaphragm Material shall be 1 inch maximum size. Filter Diaphragm Material shall be the product of crushing rock or gravel. The 1 inch crushed rock or gravel shall conform to the gradation and ASTM C131 Test Grading listed below:

| Sieve Size | Percent Passing |
|---|---|
| 1-1/2 inch | 100 |
| 1 inch | 90-100 |
| 3/4 inch | 80-100 |
| 3/8 inch | 40-90 |
| No. 4 | 25-40 |
| No. 8 | 18-33 |
| No. 30 | 5-15 |
| No. 50 | 0-7 |
| No. 200 | 0-3 |
| ASTM C131 Test Grading | B |

Sieve analyses of this Filter Diaphragm Material shall be performed in accordance with California Test 202. All percentages referred in the table above shall be determined by weight.

26.9 Measurement - Measurement for payment for the contract items Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/2-Ton Class; Rock Slope Protection, 1/4-Ton Class; and Rock Slope Protection, Light Class; shall be the number of tons placed as specified and as shown on the drawings.

Measurement for payment for the contract item Crushed Rock will be the number of cubic yards placed to the lines, grades and dimensions shown on the drawings. No allowance will be made for Crushed Rock placed outside said dimensions unless otherwise ordered by the Engineer.

Measurement for Payment for the contract item Filter Blanket, No. 2 Backing Class shall be the number of cubic yards placed as specified and shown on the drawings.

Measurement for payment for the contract item Rock Slope Protection Fabric shall be the number of square yards placed as specified. No measurement for payment will be made for laps required for installation or for convenience to the Contractor.

Measurement for payment for the contract item Concrete Grout for Grouted Rock Riprap and Grouted No. 2 Backing Class shall be the number of cubic yards placed as specified.

Measurement for payment for the contract item Filter Diaphragm Material will be the number of cubic yards placed to the lines, grades and dimensions shown on the drawings. No allowance will be made for Filter Diaphragm Material placed outside said dimensions unless otherwise ordered by the District or the Engineer.

26.10 Payment - The contract prices paid for Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/2-Ton Class; Rock Slope Protection 1/4-Ton Class; Rock Slope Protection, Light Class; Crushed Rock; Filter Blanket, No. 2 Backing Class; Rock Slope Protection Fabric; Concrete Grout for Grouted Rock Riprap and Grouted No. 2 Backing Class; and Filter Diaphragm Material shall include full compensation for all costs incurred under this section.

No separate payment will be made for necessary excavation associated with the work discussed in this Section.

## SECTION 27 - DUST ABATEMENT

27.1 Description - This section covers the implementation of dust control measures necessary to prevent harm and nuisance from dust. Supplementing Section 8.06 of the General Provisions, the Contractor shall comply with all the provisions of the South Coast Air Quality Management District (SCAQMD) Rule 403 and Rule 403.1 as described in Appendix "A".

27.2 Dust Abatement - The contract item Dust Abatement includes the action necessary to prevent, reduce or control dust within the work area as required to complete the work. The Contractor shall carry out proper and efficient measures to prevent his operations from producing dust in amounts damaging to property or causing a nuisance or harm to persons living nearby or occupying buildings in the vicinity of the work.

The Contractor shall implement appropriate fugitive dust control measures including watering, stabilized construction access to reduce tracking of mud or dirt onto public roads, covering trucks hauling loose dirt offsite and street sweeping of track-out. The Contractor can contact SCAQMD for their Rule 403 and Rule 403.1 implementation handbooks which contain a detailed listing of reasonably available dust control measures.

The Contractor shall prepare and implement a dust control plan in accordance with the requirements set forth in the latest version of the SCAQMD Rule 403 and Rule 403.1. The methods to be used for controlling dust in the construction area and along haul roads shall be approved by the Engineer prior to starting any work included in this contract. If the Contractor's operations meet the Rule 403 definition of "Large Operations", the dust control plan shall be submitted to SCAQMD for review and approval prior to start of operations.

Water material excavated or graded sufficiently to prevent excessive amounts of dust. Water at least three times daily with complete coverage, preferable in the late morning and after work is done for the day and ensure that all disturbed areas of potentially lead-contaminated soil maintain at least 12-percent moisture content.

Apply non-toxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).

Construction equipment idling shall not exceed 10 minutes to ensure that the SCAQMD daily thresholds are not exceeded.

27.3 Payment - The contract lump sum price paid for Dust Abatement shall include full compensation for all direct and indirect costs incurred under this section.

This payment will be made on a basis of the percentage of work completed on the entire project.

## SECTION 28 – NOT USED

## SECTION 29 – STORMWATER AND NON-STORMWATER POLLUTION CONTROL

29.1 Description – The contract item Stormwater and Non-Stormwater Pollution Control shall include preparing, submitting, obtaining approval of, amending and implementing the Stormwater Pollution Prevention Plan (SWPPP) as required by the State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Board (CRWQCB) - Colorado River Basin Region. The contract item Non-Stormwater Discharge or Dewatering shall include compliance with Colorado River Basin Water Quality Board Order No. R7-2008-0001.

The SWPPP shall identify site specific Best Management Practices (BMPs) to be implemented during and after construction to minimize the potential pollution of stormwater runoff and receiving waters. The identified BMPs shall be practices designed to minimize or eliminate the discharge of pollutants from the construction site and Contractor's construction activities, including, but not limited to:

1. Good housekeeping practices for solid and sanitary/septic waste management, vehicle and equipment cleaning/maintenance, and material handling and storage.

2. Construction procedures such as stabilized construction access points, scheduling/phasing to minimize areas of soil disturbance, soil stabilization and erosion/sediment control.

3. Measures to control debris disposal, releases of sediment laden liquids, spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural BMPs.

4. Staff must be trained in stormwater management.

The SWPPP shall also stipulate an ongoing program for monitoring and maintenance of all BMPs.

29.2 General Requirements – All activities performed by the Contractor for this project shall conform to the requirements of the Waste Discharge Requirements for Discharges from the MS4 within the Whitewater River Watershed RCFC&WCD, owner/operator, County of Riverside, owner/operator and CVWD, owner/operator (Board Order R7-2008-0001, NPDES No. CAS617002) for Discharges of Stormwater Runoff Associated with Construction Activity, hereafter referred to as the "General Permit", issued by the SWRCB. This General Permit regulates both stormwater and non-stormwater discharges associated with Contractor's construction activities. A copy of this General Permit is included as Appendix "D" of these Specifications.

**In the event the District incurs any Administrative Civil Liability or Mandatory Minimum Penalty (fine) imposed by the CRWQCB – Colorado River Basin Region, as a result of Contractor's failure to fully implement the provisions of this section and permit requirements, "Stormwater and Non-Stormwater Pollution Control", the Engineer may, in the exercise of his sole judgment and discretion, withhold from payments otherwise due Contractor a sufficient amount to cover the Civil Liability. Liability for "Negligent Violations" may be in an amount up to $50,000 per day per deemed occurrence while "Knowing Violations" can result in fines as high as $250,000 and imprisonment.**

Stormwater and Non-Stormwater Pollution Control work shall conform to the requirements in the latest version of the California Stormwater Quality Association (CASQA) Handbook, entitled **"California Stormwater BMP Handbook – Construction"**. A copy of the "California Stormwater BMP Handbook – Construction", hereafter referred to as the "CASQA Handbook", may be obtained from CASQA, Post Office Box 2105, Menlo Park, California 94026-2105. Telephone: 650.366.1042. Copies of the handbook can also be downloaded from the CASQA Internet site at http://www.cabmphandbooks.com/construction.asp. In addition, a copy of the CASQA Handbook is available for review at the District's office.

The Contractor shall be responsible for all costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements set forth in this section, "Stormwater and Non-Stormwater Pollution Control", including but not limited to, compliance with the applicable provisions of the CASQA Handbook, General Permit, Federal, State and local regulations. For the purpose of this paragraph, costs and liabilities include, but are not limited to, fines, penalties and damages whether assessed against the District or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Act.

The Contractor shall become fully informed of and comply with the applicable provisions of the CASQA Handbook, General Permit, Federal, State and local regulations that govern the Contractor's activities and operation pertaining to both stormwater and non-stormwater discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall, at all times, keep copies of the General Permit, approved SWPPP and all amendments at the project site. The SWPPP shall be made available upon request of a representative of the SWRCB, CRWQCB, United States Environmental Protection Agency (USEPA) or local stormwater management agency. Requests by the public shall be directed to the Engineer.

The Contractor is solely and exclusively responsible for any arrangements made between the Contractor and other property owners or entities that result in disturbance of areas or construction activities being conducted outside limits of the designated rights-of-way and temporary construction easements as shown on the project drawings.

The Contractor shall, at reasonable times, allow authorized agents of the CRWQCB, SWRCB, USEPA or local stormwater management agency, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the construction site and the Contractor's facilities pertinent to the work;

2. Have access to and copy any records required to be kept as specified in the General Permit;

3. Inspect the construction site, including any offsite staging areas or material storage areas, and related soil stabilization practices and sediment control BMPs; and

4. Sample or monitor for the purpose of ensuring compliance with the General Permit.

The Contractor shall notify the Engineer immediately upon request from regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records.

29.3 Stormwater Pollution Prevention Plan Preparation and Approval - The Contractor shall obtain approval of the SWPPP as part of the Stormwater and Non-Stormwater Pollution Control work for this contract. The SWPPP shall include an appropriate sampling and analysis plan (SAP) as required by Section B, "Monitoring Program and Reporting Requirements", of the General Permit. A guidance document titled "Construction Storm Water Sampling and Analysis Guidance Document" is available from the California Stormwater Quality Association internet site at http://www.cabmphandbooks.com/Construction.asp. The Contractor shall prepare and implement the SWPPP in accordance with the CASQA Handbook and SAP, the General Permit and these Detailed Specifications.

**In case of conflict between the CASQA Handbook and these Detailed Specifications, the Detailed Specifications shall govern; in case of conflict between these Detailed Specifications and the General Permit, the latter shall govern.**

Within five (5) working days after the award of the contract, the Contractor shall submit two (2) copies of the SWPPP to the Engineer for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the SWPPP. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within three (3) working days of receipt of the Engineer's comments and shall allow ten (10) working days for the Engineer to review the revisions. The Contractor shall submit four (4) copies of the approved SWPPP to the Engineer prior to the pre-construction meeting. **The Contractor must have an approved SWPPP prior to the pre-construction meeting.**

The objectives of the SWPPP shall be to identify all pollution sources associated with Contractor's construction activities that may adversely affect the quality of stormwater discharges; to identify all non-stormwater discharges; to identify, construct, implement and maintain water pollution control best management practices, hereafter referred to as "BMPs", to reduce to the maximum extent practicable pollutants in both stormwater discharges and authorized non-stormwater discharges from the construction site during construction and to develop a maintenance schedule for BMPs after construction is completed under this contract.

The SWPPP shall incorporate BMPs in each of the following categories:

1. Soil stabilization practices;
2. Sediment control practices;
3. Sediment tracking control practices;
4. Wind erosion control practices; and
5. Non-stormwater management, and waste management and disposal control practices.

Specific objectives and minimum requirements for each category of BMPs are described in the CASQA Handbook. The Contractor shall consider the objectives and minimum requirements presented in the CASQA Handbook for each of the above categories. When minimum requirements are listed for any category, the Contractor shall incorporate one or more of the listed minimum BMPs required into the SWPPP and implement them on the project to meet the pollution control objectives for the category. In addition, the Contractor shall consider other BMPs presented in the CASQA Handbook to supplement the minimum BMPs required when necessary to meet the objectives of the SWPPP and maintain compliance with the General Permit. The Contractor shall document the selection process in accordance with the procedure specified in the CASQA Handbook.

The Contractor should not assume that the minimum BMPs required for each category presented in the CASQA Handbook are adequate to meet the pollution control objectives. The Contractor may use other effective BMPs, as approved by the Engineer, in addition to the minimum as required in the CASQA Handbook to achieve the pollution control objectives.

The SWPPP shall include the following items as described in the CASQA Handbook, SAP and General Permit:

1. Title Page;
2. Table of Contents;
3. Certifications and Approval;
4. SWPPP Amendments, if any;
5. Introduction and Project Description;
6. References;
7. Source Identification;
8. Erosion Control;
9. Sediment Control;
10. Tracking Control;
11. Wind Erosion Control;
12. Non-Stormwater Management Control;
13. Waste Management and Materials Pollution Control;
14. Vicinity Map;
15. Water Pollution Control Drawings;
16. BMP Consideration Checklist;
17. Computation Sheet for Determining Runoff Coefficients;

18. Computation Sheet for Determining Run-on Discharges;
19. A copy of the Notice Of Intent (NOI) form submitted by the District for this project;
20. A copy of the Waste Discharge Identification (WDID) number or proof of mailing of the NOI (provided by the District);
21. Program for Maintenance, Inspection and Repair of Construction Site BMPs;
22. Stormwater Quality Construction Site Inspection Checklist;
23. Trained Contractor Personnel Log;
24. Subcontractor Notification Letter and Log;
25. Notice of Non-Compliance;
26. SWPPP and Monitoring Program Checklist;
27. Annual Certification of Compliance Form;
28. A copy of other Plans and/or Permits, if any;
29. Water Pollution Control Cost Breakdown;
30. Notice of Termination (NOT);
31. BMPs Selected for the Project;
32. Sampling Activity Log;
33. Construction Material and Pollutant Testing Guidance Table – Non-visible Pollutants;
34. Discharge Reporting Log;
35. Pre/Post Storm Inspection Checklist;
36. Inspection Log;
37. Amendment Certification and Approval, if any;
38. Amendment Log;
39. Annual Compliance Certification;
40. SWPPP Checklist.

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, individuals responsible for creating, revising, overseeing, and implementing the SWPPP should participate in applicable training programs and document such training in the SWPPP. A copy of the SWPPP should be located at the construction site.

The following notes (or notes of substantially similar intent) that address pollution prevention to the Maximum Extent Practicable during the construction phase of a project on a year-round basis need to be placed on the Stormwater and Non-Stormwater Pollution Control Drawings:

- Erosion control BMPs shall be implemented and maintained to minimize and/or prevent the entrainment of soil in runoff from disturbed soil areas on construction sites.
- Sediment control BMPs shall be implemented and maintained to prevent and/or minimize the transport of soil from the construction site.
- Stockpiles of soil shall be properly contained to eliminate or reduce sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.

- Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented to eliminate or reduce transport from the site to streets, drainage facilities or adjoining properties by wind or runoff.
- Runoff from equipment and vehicle washing shall be contained at construction sites and must not be discharged to receiving waters or the local storm drain system. Washwaters or rinsate from ready mix, concrete, or cement vehicles must be handled appropriately and may not be discharged to receiving waters or any storm drain system.
- All construction contractor and subcontractor personnel are to be made aware of the required best management practices and good housekeeping measures for the project site and any associated construction staging areas.
- At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed in trash or recycle bins.
- Construction sites shall be maintained in such a condition that a storm does not carry wastes or pollutants off the site. Discharges other than stormwater (non-stormwater discharges) are prohibited, except as authorized by an individual NPDES permit or the State-wide General Permit for Storm Water Discharges Associated with Construction Activity. Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, solvents, detergents, glues, lime, pesticides, herbicides, fertilizers, wood preservatives and asbestos fibers; paint flakes or stucco fragments; fuels, oils, lubricants and hydraulic, radiator or battery fluids; concrete and related cutting or curing residues; floatable wastes; wastes from engine/equipment steam cleaning or chemical degreasing; wastes from street cleaning; and super-chlorinated potable water from line flushing and testing. During construction, disposal of such materials should occur in a specified and controlled temporary area onsite physically separated from potential stormwater runoff, with ultimate disposal in accordance with local, State and Federal requirements.
- Discharging contaminated groundwater produced by dewatering groundwater that has infiltrated into the construction site is prohibited. Discharging of contaminated soils via surface erosion is also prohibited.
- The Contractor is required to notify and obtain approval from the District ten (10) days prior to any non-stormwater discharge or dewatering associated with Contractor's construction activities.
- Construction sites shall be managed to minimize the exposure time of disturbed soil areas through phasing and scheduling of grading to the extent feasible and the use of temporary and permanent soil stabilization.
- BMPs shall be maintained at all times. In addition, BMPs shall be inspected prior to predicted storm events and following storm events.
- To minimize sedimentation and sediment transport, no work shall occur within areas where flowing and/or standing water is present. Additionally, in-channel work shall not be performed during or immediately following high flow events.
- A spill containment plan shall be kept onsite to ensure that pollutants are prevented from entering jurisdictional waters. Areas must be designated entirely

outside jurisdictional waters for chemical and petroleum or oil storage. A spill response kit will be maintained in these areas to mitigate any spills.

- All temporary fills shall be removed in their entirety. Any excess materials must be appropriately disposed of outside of jurisdictional waters.

29.4 Stormwater Pollution Prevention Plan Amendments - The Contractor shall prepare amendments to the SWPPP, both graphically and in narrative form, whenever there is a change in Contractor's construction activities or operations which may result in the discharge of pollutants to surface waters, groundwaters, municipal storm drain systems, or as deemed necessary by the Engineer. The Contractor shall also amend the SWPPP if it is in violation of any condition of the General Permit, or has not effectively achieved the objective of reducing pollutants in stormwater discharges. Amendments shall show additional BMPs, revised Contractor's construction activities or operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to effectively control water pollution.

Amendments to the SWPPP shall be submitted for review and approval by the Engineer in the same manner specified for the initial approval of the SWPPP. The Contractor shall date and attach all approved amendments to the SWPPP. Upon approval of the amendment, the Contractor shall implement the additional BMPs, revised construction activities or operations.

29.5 Annual Compliance Certification – The Contractor shall certify annually that construction activities are in compliance with the requirements of the General Permit and the approved SWPPP. The certification must be completed by July 1st of each year.

29.6 Non-Compliance Reporting - If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within two (2) calendar days of identification of non-compliance activities.

29.7 SWPPP Implementation - Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for placing, installing, constructing, inspecting and maintaining the BMPs as well as conducting the sampling and analysis plan as included in the SWPPP and any amendments thereto, and for removing and disposing of temporary BMPs. Unless otherwise directed by the Engineer or specified in these Detailed Specifications, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in accordance with Section 6.05, "TEMPORARY SUSPENSION OF THE WORK", of the General Provisions. Requirements for installation, construction, inspection, maintenance, removal and disposal of BMPs are specified in the Caltrans Handbooks and these Detailed Specifications.

**The Engineer may order the suspension of construction operations if the Contractor fails to comply with the requirements of this section, "Stormwater and Non-Stormwater Pollution Control", as determined by the Engineer.**

**The Contractor will not be compensated for sampling and analysis work because of the Contractor's failure to properly implement, inspect, maintain and repair BMPs in the**

**approved SWPPP and any amendments thereto, or for failing to store construction materials or wastes in watertight containers.**

(a) Stormwater Pollution Control - **The Contractor shall implement soil stabilization practices and sediment control BMPs, including minimum requirements as presented in the Caltrans Handbooks, on all disturbed areas of the project site throughout the rainy season, defined as between August 1 - October 1 and November 1 - May 1, which is consistent with Caltrans' definition of the rainy season for the eastern desert region.**

Implementation of soil stabilization practices and sediment control BMPs for soil-disturbed areas, including but not limited to, rough graded access roads, slopes, channel inverts, operational inlets and outlets of the project shall be completed no later than ten (10) calendar days prior to the start of the rainy season or upon start of applicable Contractor's construction activities for projects which begin either during or within ten (10) calendar days of the rainy season.

The Engineer may require the Contractor, on a case-by-case basis, to reduce the active, soil-disturbed area limit of the project. The Contractor shall demonstrate the ability and preparedness to fully deploy soil stabilization practices and sediment control BMPs to protect soil-disturbed areas of the project site by maintaining an adequate quantity of soil stabilization and sediment control materials onsite to protect exposed, soil-disturbed areas and a detailed plan for the mobilization of sufficient labor and equipment to fully deploy the required BMPs prior to the onset of precipitation and for the duration of the project.

Throughout the rainy season, soil-disturbed areas of the project site shall be considered to be nonactive whenever soil disturbing activities are expected to be discontinued for a period of fifteen (15) calendar days or more. Areas that will become nonactive either during the rainy season or within ten (10) calendar days thereof shall be fully protected with soil stabilization practices such as covering with mulch, temporary seeding, fiber rolls, blankets, etc., within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur. Areas that will become nonactive either during the rainy season or within ten (10) calendar days thereof shall be fully protected with sediment control BMPs within ten (10) calendar days of the discontinuance of soil disturbing activities or prior to the onset of precipitation, whichever is first to occur.

Throughout the rainy season, active soil-disturbed areas of the project site shall be fully protected at the end of each day with soil stabilization practices and sediment control BMPs. The Contractor shall monitor the weather forecast on a daily basis. The National Weather Service forecast shall be used, or an alternative weather forecast proposed by the Contractor may be used if approved by the Engineer. If precipitation is predicted prior to the end of the following workday,

construction scheduling shall be modified, as required, and the Contractor shall deploy functioning BMPs prior to the onset of the precipitation.

(b) Non-Stormwater Pollution Control - **The Contractor shall implement, year-round and throughout the duration of the project, BMPs included in the SWPPP for sediment tracking, wind erosion, non-stormwater management, and waste management and disposal.**

(c) Inspections and Reporting - The Contractor shall regularly inspect the construction site for BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. The Contractor shall identify corrective actions and time frames to address any damaged BMPs or reinitiate any BMPs that have been discontinued.

At a minimum, the Contractor shall inspect the construction site as follows:

1. Prior to a forecast storm;
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24 hour intervals during extended precipitation events; and
4. At a regular interval of once every 2 weeks.

The construction site inspection checklist provided in the Caltrans Handbooks shall be used to ensure that the necessary BMPs are being properly implemented and are functioning adequately. The Contractor shall submit one copy of each site inspection record to the Engineer.

(d) Maintenance - The Contractor shall maintain construction site BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. If the Contractor or the Engineer identifies a deficiency in the deployment or functioning of an identified BMP, the deficiency shall be corrected by the Contractor immediately, or by a later date and time if requested by the Contractor and approved by the Engineer in writing, but not later than the onset of subsequent precipitation events. The correction of deficiencies shall be at no additional cost to the District.

(e) Training – The Contractor shall describe the types of training that the Contractor's BMP inspection, maintenance and repair personnel have received or will receive that is directly related to stormwater pollution prevention.

29.8 Payment - The contract lump sum price paid for Stormwater and Non-Stormwater Pollution Control work shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising and amending the SWPPP, and installing, constructing, maintaining, removing and disposing of BMPs as shown in the SWPPP, as specified in the Caltrans

Handbooks and Sample Contractor's Water Quality SAPs, General Permit and these Detailed Specifications, and as directed by the Engineer.

No separate payment will be made for Non-Stormwater Discharge or Dewatering.

Payment will be made on a basis of the percentage of work completed on the entire project.

## SECTION 30 – ENVIRONMENTAL AND REGULATORY REQUIREMENTS

30.1 Description – This section covers the 1602 Permit Compliance; Corps of Engineers Section 404 Permit; Clean Water Act Section 401 Water Quality Certification (WQC); Accidental Cultural/Paleontological Resource/Human Remains and Hazardous Materials Discovery; Peninsular Bighorn Sheep Clearance Survey; Burrowing Owl Pre-Construction Survey; Nesting Bird Pre-Construction Survey; and Traffic.

30.2 1602 Permit Compliance – A 1602 Agreement has been issued to the District by the Department of Fish and Game (DFG), State of California The Contractor's attention is directed to Measure No. 2.4 Pollution and Litter. This Agreement is included as Appendix "G" of these specifications.

30.3 Corps of Engineers Section 404 Permit – A 404 Permit has been issued to the District by the Army Corps of Engineers. The Contractor shall comply with all conditions of this permit. A copy of the permit is included as Appendix "H" of these specifications.

30.4 Clean Water Act Section 401 Water Quality Certification (WQC) – A Clean Water Act Section 401 WQC has been issued by the U.S. Environmental Protection Agency. The Section 401 WQC requires the District to comply with NPDES requirements by incorporating necessary stormwater pollution prevention BMPs. The Contractor's attention is directed to Section 29 of these specifications regarding Stormwater and Non-Stormwater Pollution Control provisions. A copy of the permit is included as Appendix "I" of these specifications.

30.5 Accidental Cultural/Paleontological Resource/Human Remains and Hazardous Materials Discovery – In the event that any hazardous materials, cultural/paleontological resources, or human remains are uncovered, the Contractor shall immediately cease all construction or ground disturbance activity in the vicinity of find and notify the Engineer. The District will provide the appropriate professional to assess the significance of the discovery, notify the necessary agencies and, if necessary, develop appropriate management and treatment measures. **The Contractor shall not resume construction in the affected area until directed to do so by the Engineer.**

Should a discovery result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to down-time and idle equipment or additional payments over and above the agreed upon contract prices.

30.6 Peninsular Bighorn Sheep Clearance Survey – The District must conduct a Peninsular Bighorn Sheep pre-construction presence/absence survey within 10 days prior to clearing or ground disturbance by the Contractor. Once the District determines that Peninsular Bighorn

Sheep is absent from the project site, the Contractor shall begin construction within 10 days of said determination or notify the Engineer that another survey is needed. If Peninsular Bighorn Sheep is found within the area as determined by the presence of fresh bighorn sheep sign, the U.S. Fish and Wildlife Service will be consulted to determine additional mitigation measures that may be required.

Should Peninsular Bighorn Sheep result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to down-time and idle equipment or additional payments over and above the agreed upon contract prices.

30.7 Burrowing Owl Pre-Construction Survey – The District must conduct a Burrowing Owl protocol survey between 14 and 30 days prior to construction and a second pre-construction survey within 24 hours of ground disturbance of potential owl habitat. Once the District determines that Burrowing Owl is absent from the project site, the Contractor shall begin construction within 24 hours of said determination or notify the Engineer that another pre-construction survey is needed.

If Burrowing Owl(s) is found within the project site, the Contractor shall not conduct any construction activities within a buffer area of occupied burrows during the breeding season (February 1 through August 31). The buffer area (i.e., specific distance from occupied burrows) will be established according to DFG guidelines referenced in the 1602 Agreement Section 2.1. Any active burrow found during survey efforts will be mapped on the construction plans. Any Burrowing Owl(s) found within the project site that cannot be avoided will be relocated by the District during the non-breeding season (September 1 through January 31).

Should Burrowing Owl result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to down-time and idle equipment or additional payments over and above the agreed upon contract prices.

30.8 Nesting Bird Pre-Construction Survey – The District must conduct a survey within 7 days prior to construction during the bird nesting season (March 15 through September 15) for the presence of any active bird nests (common or special status). Any nest found during the survey will be mapped on the construction plans.

If nesting activity is present at any raptor nest site, the active site will be protected until nesting activity has ended. The following restrictions to construction activities are required to protect any nest site, unless modified by a qualified Biologist, until nests are no longer active: (1) clearing limits will be established within a 500 foot buffer around any occupied nest; and (2) access and surveying will be restricted within 300 feet of any occupied nest. Any encroachment into the buffer area around the known nest will only be allowed if the Biologist determines that the proposed activity will not disturb the nest occupants. Construction can proceed when the qualified Biologist has determined that fledglings have left the nest.

If a nest is occupied during the non-nesting season, the nest site will be monitored by a qualified Biologist, and when the bird is away from the nest, the Biologist will flush the bird to open space areas. A qualified Biologist, or construction personnel under the direction of the qualified Biologist, will then remove the nest site so the bird cannot return to its nest.

Should nesting birds result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to down-time and idle equipment or additional payments over and above the agreed upon contract prices.

30.9 Traffic - The Contractor shall maintain access for emergency fire or medical vehicles to affected residences and businesses at all times during construction.

## SECTION 31 AND SECTION 32 – NOT USED

## SECTION 33 – COLOR VARNISH

33.1 Description – This section covers the contract item Color Varnish.

33.2 Color Varnish – The contract item Color Varnish includes furnishing labor, equipment and materials and performing all work for applying simulated desert varnish on all cut slopes and rock slope protection visible from the downstream side of the dam and as directed by the Engineer.

The coloring material shall be simulated desert varnish that will impart natural patinas to the designated areas. The material shall produce stable oxidized colors with a projected life of fifty (50) years.

Approved Products:

a. Natina:
Natina Products
1577 First Street
Coachella, CA 92236
877.762.8462

b. Permeon:
Advanced Concrete Technologies
11622 Newport Avenue
Santa Ana, CA 92705
714.731.0906

c. Or Approved Equal

The coloring material shall be applied directly to cut slopes and rock slope protection. There shall be no dust or soil on the rock slope protection surface at the time of application. The

surfaces to be tinted shall be uniformly treated to blend with the surrounding colors of the environment. Variegated patinas that develop shall be controlled by a custom blending of the coloring material and/or application techniques. The coloring material shall be clear when applied and full color development shall occur within two to four weeks. The Contractor shall apply the color varnish to two minimum 25 square foot a test sections to be inspected by the Engineer. Test section color shall be approved prior to application to the downstream dam face. Test sections shall be repeated until a satisfactory color finish is achieved.

33.3 Measurement – Measurement for payment for the contract item Color Varnish shall be the number of plan form square feet on which the coloring material is applied. No payment will be made for the test sections.

33.4 Payment – The contract price paid for Color Varnish shall include full compensation for all costs incurred under this section.

# APPENDIX "A"

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

# RULE 403

# AND

# RULE 403.1

(Adopted May 7, 1976) (Amended November 6, 1992)
(Amended July 9, 1993) (Amended February 14, 1997)
(Amended December 11, 1998)(Amended April 2, 2004)
(Amended June 3, 2005)

## RULE 403. FUGITIVE DUST

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

(1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.

(2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.

(3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.

(4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.

(5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

(6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.

(7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.

(8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.

(10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

(11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.

(13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

(14) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;

(B) been paved or otherwise covered by a permanent structure; or

(C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.

(15) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(16) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.

(17) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.

(18) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(19) HIGH WIND CONDITIONS means that instantaneous wind speeds exceed 25 miles per hour.

(20) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.

(21) LARGE OPERATIONS means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

meters (5,000 cubic yards) or more three times during the most recent 365-day period.

(22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

(25) $PM_{10}$ means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

(26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.

(29) SIMULTANEOUS SAMPLING means the operation of two $PM_{10}$ samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.

(30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange

County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

(31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.

(32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.

(34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) Requirements

(1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

(A) the dust remains visible in the atmosphere beyond the property line of the emission source; or

(B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

(2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

(3) No person shall cause or allow $PM_{10}$ levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for $PM_{10}$ monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for $PM_{10}$.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

(4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

(5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

(A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

(B) Pave the surface extending at least 100 feet and at least 20 feet wide.

(C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).

(6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.

(e) Additional Requirements for Large Operations

(1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:

(A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;

(B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;

(C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

(D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;

(E) identify a dust control supervisor that:

(i) is employed by or contracted with the property owner or developer;

(ii) is on the site or available on-site within 30 minutes during working hours;

(iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

(iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and

(F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).

(2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).

(f) Compliance Schedule

The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

(1) The provisions of this Rule shall not apply to:

(A) Dairy farms.

(B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.

(C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.

(D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.

(G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.

(H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.

(I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.

(J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:

(i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and

(ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.

(K) sandblasting operations.

(2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:

(A) When wind gusts exceed 25 miles per hour, provided that:

(i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;

(ii) records are maintained in accordance with subparagraph (e)(1)(C).

(B) To unpaved roads, provided such roads:

(i) are used solely for the maintenance of wind-generating equipment; or

(ii) are unpaved public alleys as defined in Rule 1186; or

(iii) are service roads that meet all of the following criteria:

(a) are less than 50 feet in width at all points along the road;

(b) are within 25 feet of the property line; and

(c) have a traffic volume less than 20 vehicle-trips per day.

(C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.

(3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.

(4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:

(A) Blasting operations which have been permitted by the California Division of Industrial Safety; and

(B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.

(5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

(6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.

(7) The provisions of subdivision (e) shall not apply to:

(A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.

(B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.

(C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.

(8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for $PM_{10}$ pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Backfilling | 01-1 Stabilize backfill material when not actively handling; and<br>01-2 Stabilize backfill material during handling; and<br>01-3 Stabilize soil at completion of activity. | ✓ Mix backfill soil with water prior to moving<br>✓ Dedicate water truck or high capacity hose to backfilling equipment<br>✓ Empty loader bucket slowly so that no dust plumes are generated<br>✓ Minimize drop height from loader bucket |
| Clearing and grubbing | 02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and<br>02-2 Stabilize soil during clearing and grubbing activities; and<br>02-3 Stabilize soil immediately after clearing and grubbing activities. | ✓ Maintain live perennial vegetation where possible<br>✓ Apply water in sufficient quantity to prevent generation of dust plumes |
| Clearing forms | 03-1 Use water spray to clear forms; or<br>03-2 Use sweeping and water spray to clear forms; or<br>03-3 Use vacuum system to clear forms. | ✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements |
| Crushing | 04-1 Stabilize surface soils prior to operation of support equipment; and<br>04-2 Stabilize material after crushing. | ✓ Follow permit conditions for crushing equipment<br>✓ Pre-water material prior to loading into crusher<br>✓ Monitor crusher emissions opacity<br>✓ Apply water to crushed material to prevent dust plumes |

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Cut and fill | 05-1 Pre-water soils prior to cut and fill activities; and<br>05-2 Stabilize soil during and after cut and fill activities. | ✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration<br>✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts |
| Demolition – mechanical/manual | 06-1 Stabilize wind erodible surfaces to reduce dust; and<br>06-2 Stabilize surface soil where support equipment and vehicles will operate; and<br>06-3 Stabilize loose soil and demolition debris; and<br>06-4 Comply with AQMD Rule 1403. | ✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes |
| Disturbed soil | 07-1 Stabilize disturbed soil throughout the construction site; and<br>07-2 Stabilize disturbed soil between structures | ✓ Limit vehicular traffic and disturbances on soils where possible<br>✓ If interior block walls are planned, install as early as possible<br>✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes |
| Earth-moving activities | 08-1 Pre-apply water to depth of proposed cuts; and<br>08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and<br>08-3 Stabilize soils once earth-moving activities are complete. | ✓ Grade each project phase separately, timed to coincide with construction phase<br>✓ Upwind fencing can prevent material movement on site<br>✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes |

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Importing/exporting of bulk materials | 09-1 Stabilize material while loading to reduce fugitive dust emissions; and<br>09-2 Maintain at least six inches of freeboard on haul vehicles; and<br>09-3 Stabilize material while transporting to reduce fugitive dust emissions; and<br>09-4 Stabilize material while unloading to reduce fugitive dust emissions; and<br>09-5 Comply with Vehicle Code Section 23114. | ✓ Use tarps or other suitable enclosures on haul trucks<br>✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage<br>✓ Comply with track-out prevention/mitigation requirements<br>✓ Provide water while loading and unloading to reduce visible dust plumes |
| Landscaping | 10-1 Stabilize soils, materials, slopes | ✓ Apply water to materials to stabilize<br>✓ Maintain materials in a crusted condition<br>✓ Maintain effective cover over materials<br>✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes<br>✓ Hydroseed prior to rain season |
| Road shoulder maintenance | 11-1 Apply water to unpaved shoulders prior to clearing; and<br>11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance. | ✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs<br>✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs |

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Screening | 12-1 Pre-water material prior to screening; and<br>12-2 Limit fugitive dust emissions to opacity and plume length standards; and<br>12-3 Stabilize material immediately after screening. | ✓ Dedicate water truck or high capacity hose to screening operation<br>✓ Drop material through the screen slowly and minimize drop height<br>✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point |
| Staging areas | 13-1 Stabilize staging areas during use; and<br>13-2 Stabilize staging area soils at project completion. | ✓ Limit size of staging area<br>✓ Limit vehicle speeds to 15 miles per hour<br>✓ Limit number and size of staging area entrances/exists |
| Stockpiles/ Bulk Material Handling | 14-1 Stabilize stockpiled materials.<br>14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage. | ✓ Add or remove material from the downwind portion of the storage pile<br>✓ Maintain storage piles to avoid steep sides or faces |

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Traffic areas for construction activities | 15-1 Stabilize all off-road traffic and parking areas; and<br>15-2 Stabilize all haul routes; and<br>15-3 Direct construction traffic over established haul routes. | ✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas<br>✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes |
| Trenching | 16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and<br>16-2 Stabilize soils at the completion of trenching activities. | ✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching<br>✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment |
| Truck loading | 17-1 Pre-water material prior to loading; and<br>17-2 Ensure that freeboard exceeds six inches (CVC 23114) | ✓ Empty loader bucket such that no visible dust plumes are created<br>✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading |
| Turf Overseeding | 18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and<br>18-2 Cover haul vehicles prior to exiting the site. | ✓ Haul waste material immediately off-site |

**TABLE 1**
**BEST AVAILABLE CONTROL MEASURES**
**(Applicable to All Construction Activity Sources)**

| Source Category | Control Measure | Guidance |
|---|---|---|
| Unpaved roads/parking lots | 19-1 Stabilize soils to meet the applicable performance standards; and<br>19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots. | ✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements |
| Vacant land | 20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures. | |

## Table 2
## DUST CONTROL MEASURES FOR LARGE OPERATIONS

| FUGITIVE DUST SOURCE CATEGORY | CONTROL ACTIONS | |
|---|---|---|
| **Earth-moving (except construction cutting and filling areas, and mining operations)** | (1a) | Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR |
| | (1a-1) | For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction. |
| **Earth-moving: Construction fill areas:** | (1b) | Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations. |

Table 2 (Continued)

| FUGITIVE DUST SOURCE CATEGORY | CONTROL ACTIONS | |
|---|---|---|
| **Earth-moving: Construction cut areas and mining operations:** | (1c) | Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors. |
| **Disturbed surface areas (except completed grading areas)** | (2a/b) | Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area. |
| **Disturbed surface areas: Completed grading areas** | (2c) | Apply chemical stabilizers within five working days of grading completion; OR |
| | (2d) | Take actions (3a) or (3c) specified for inactive disturbed surface areas. |
| **Inactive disturbed surface areas** | (3a) | Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR |
| | (3b) | Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR |
| | (3c) | Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR |
| | (3d) | Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas. |

Table 2 (Continued)

| FUGITIVE DUST SOURCE CATEGORY | CONTROL ACTIONS | |
|---|---|---|
| **Unpaved Roads** | (4a) | Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR |
| | (4b) | Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR |
| | (4c) | Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface. |
| **Open storage piles** | (5a) | Apply chemical stabilizers; OR |
| | (5b) | Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR |
| | (5c) | Install temporary coverings; OR |
| | (5d) | Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities. |
| **All Categories** | (6a) | Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used. |

TABLE 3
CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS

| FUGITIVE DUST SOURCE CATEGORY | CONTROL MEASURES |
|---|---|
| **Earth-moving** | (1A) Cease all active operations; OR<br>(2A) Apply water to soil not more than 15 minutes prior to moving such soil. |
| **Disturbed surface areas** | (0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR<br>(1B) Apply chemical stabilizers prior to wind event; OR<br>(2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR<br>(3B) Take the actions specified in Table 2, Item (3c); OR<br>(4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas. |
| **Unpaved roads** | (1C) Apply chemical stabilizers prior to wind event; OR<br>(2C) Apply water twice per hour during active operation; OR<br>(3C) Stop all vehicular traffic. |
| **Open storage piles** | (1D) Apply water twice per hour; OR<br>(2D) Install temporary coverings. |
| **Paved road track-out** | (1E) Cover all haul vehicles; OR<br>(2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads. |
| **All Categories** | (1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used. |

## Table 4
## (Conservation Management Practices for Confined Animal Facilities)

| SOURCE CATEGORY | CONSERVATION MANAGEMENT PRACTICES |
|---|---|
| **Manure Handling**<br><br>**(Only applicable to Commercial Poultry Ranches)** | (1a) Cover manure prior to removing material off-site; AND<br>(1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND<br>(1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d).<br>(1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material. |
| **Feedstock Handling** | (2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins. |
| **Disturbed Surfaces** | (3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR<br>(3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR<br>(3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface. |
| **Unpaved Roads** | (4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR<br>(4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR<br>(4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface. |
| **Equipment Parking Areas** | (5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR<br>(5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches). |

(Adopted January 15, 1993)(Amended June 16, 2000)(Amended April 2, 2004)

## RULE 403.1. SUPPLEMENTAL FUGITIVE DUST CONTROL REQUIREMENTS FOR COACHELLA VALLEY SOURCES

(a) Purpose

The purpose of this rule is to reduce or prevent the amount of fine particulate matter ($PM_{10}$) entrained in the ambient air from anthropogenic (man-made) fugitive dust sources.

(b) Applicability

The provisions of this rule are supplemental to Rule 403 requirements and shall apply only to fugitive dust sources in the Coachella Valley.

(c) Definitions

(1) ACTIVE OPERATIONS shall mean any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface areas, or agricultural operations.

(2) AGRICULTURAL OPERATIONS means any operation occurring on a ranch or farm directly related to the growing of crops, or raising of fowls or animals for the primary purpose of making a profit or for a livelihood.

(3) ANEMOMETERS are devices used to measure wind speed in accordance with the performance standards, maintenance and calibration criteria specified in the Rule 403.1 Implementation Handbook.

(4) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter and other organic and inorganic particulate matter.

(5) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(6) COACHELLA VALLEY means that portion of Riverside County, as defined in Rule 103, subdivision (h).

(7) COACHELLA VALLEY BLOWSAND ZONE means the corridor of land extending two miles to either side of the centerline of the I-10 Freeway beginning at the SR-111/I-10 junction and continuing southeast to the I-10/ Jefferson Street interchange in Indio.

(8) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(9) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that vegetative ground cover and soil characteristics are similar to adjacent or near-by natural conditions;

(B) been paved or otherwise covered by a permanent structure;

(C) sustained a vegetative ground cover of at least 70 percent of the average native cover for a particular area for at least 30 days.

(10) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 and Rule 403.1 requirements at an active operation.

(11) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive emissions.

(12) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered and shall include, but not be limited to the following: such operations as grading, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, soil mulching and agricultural tilling.

(13) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(14) FUGITIVE DUST CONTROL PLAN means a plan to control fugitive dust plan as described in subdivision (e).

(15) ON-SITE means within the property lines of a property, or as otherwise approved by the Executive Officer.

(16) OPEN STORAGE PILE is any accumulation of bulk material which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(17) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(18) $PM_{10}$ means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable state and federal reference test methods.

(19) PROPERTY LINE means the boundaries of an area in which a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(20) RULE 403.1 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(21) STABILIZED SURFACE means any previously disturbed surface area which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403.1 Implementation Handbook.

(22) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by one of the following: concrete, asphaltic concrete, recycled asphalt, asphalt or other materials with equivalent performance as determined by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Public unpaved roads

are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(23) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(24) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) General Requirements

(1) Any person who is responsible for any active operation, open storage pile, or disturbed surface area, and who seeks an exemption pursuant to Rule 403, paragraph (g)(2) shall be required to determine when wind speed conditions exceed 25 miles per hour. The wind speed determination shall be based on either District forecasts or through use of an on-site anemometer as described in subdivision (g).

(2) Any person involved in active operations in the Coachella Valley Blowsand Zone shall stabilize new man-made deposits of bulk material within 24 hours of making such bulk material deposits. Stabilization procedures shall include one or more of the following:

(A) Application of water to at least 70 percent of the surface area of any bulk material deposits at least 3 times for each day that there is evidence of wind driven fugitive dust; or

(B) Application of chemical stabilizers in sufficient concentration so as to maintain a stabilized surface for a period of at least 6 months; or

(C) Installation of wind breaks of such design so as to reduce maximum wind gusts to less than 25 miles per hour in the area of the bulk material deposits.

(3) Any person involved in active operations in the Coachella Valley Blowsand Zone shall stabilize new deposits of bulk material originating from off-site undisturbed natural desert areas within 72 hours. Stabilization procedures shall include one or more of the following:

(A) Application of water to at least 70 percent of the surface area of any bulk material deposits at least 3 times for each day that there is evidence of wind driven fugitive dust; or

(B) Application of chemical stabilizers in sufficient concentration so as to maintain a stabilized surface for a period of at least six months.

(4) A person who conducts or authorizes the conducting of an active operation shall implement at least one of the control actions specified in Rule 403, Table 2 for the source category "Inactive Disturbed Surface Areas" to minimize wind driven fugitive dust from disturbed surface areas at such time when active operations have ceased for a period of at least 20 days.

(5) Any person involved in agricultural tilling or soil mulching activities shall cease such activities when wind speeds exceed 25 miles per hour. The wind speed determination shall be based on either District forecasts or through use of an on-site anemometer as described in subdivision (g).

(e) Fugitive Dust Control Plan and Other Requirements for Construction Projects/Earth-Moving Activities

(1) Any person who conducts or authorizes the conducting of an active operation with a disturbed surface area of more than 5,000 square feet shall not initiate any earth-moving activities unless a fugitive dust control plan is prepared and approved by the Executive Officer in accordance with the requirements of subdivision (f) and the Rule 403.1 Implementation Handbook. These provisions shall not apply to active operations exempted by paragraph (i)(4).

(2) Any operator required to submit a fugitive dust control plan under paragraph (e)(1) shall maintain a complete copy of the approved fugitive dust control plan on site in a conspicuous place at all times and the fugitive dust control plan must be provided upon request.

(3) Any operator required to submit a fugitive dust control plan under paragraph (e)(1) shall install and maintain signage with project contact information that meets the minimum standards of the Rule 403.1 Implementation Handbook prior to initiating any type of earth-moving activities.

(4) Any operator required to submit a fugitive dust control plan under paragraph (e)(1) for a project with a disturbed surface area of 50 or more acres shall have an Dust Control Supervisor that:

(A) is employed by or contracted with the property owner or developer; and

(B) is on-site or is available to be on-site within 30 minutes of initial contact; and

(C) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 and 403.1 requirements; and

(D) has completed the AQMD Coachella Valley Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class.

(5) Failure to comply with any of the provisions of an approved fugitive dust control plan shall be a violation of this rule.

(f) Fugitive Dust Control Plan Preparation, Submittal, and Approval Requirements

(1) A fugitive dust control plan prepared pursuant to paragraph (e)(1) must include the following information in a 8 ½ by 11 inch format:

(A) the name(s), address(es), and phone number(s) of the person(s) responsible for the preparation, submittal, and implementation of the fugitive dust control plan; and

(B) a description of the operation(s), including a map depicting the location of the site; and

(C) a listing of all sources of fugitive dust emissions within the property lines; and

(D) a description of the control measures as identified by the Rule 403.1 Implementation Handbook as applied to each of the sources identified in the fugitive dust control plan. The description of the control measures must be sufficiently detailed to demonstrate that the applicable best available control measures will be utilized and/or installed during all periods of active operations; and

(E) a description of the required contingency control measures (e.g., increased watering) for immediate implementation upon notice of visible dust crossing any property line.

(2) In the event that there are special technical (e.g., non-economic) circumstances, including safety, which prevent the use of at least one of the control measures as identified by the Rule 403.1 Implementation Handbook for any of the sources identified in the fugitive dust control plan, a justification statement must be provided in lieu of the description. The justification statement must explain the reason(s) why the required control measures cannot be implemented.

(3) Within 30 calendar days of the receipt of a fugitive dust control plan submitted pursuant to paragraph (e)(1), the Executive Officer will either

approve or apply any necessary conditions to the fugitive dust control plan in writing. For a fugitive dust control plan to be approved, the requirements of paragraph (f)(1) must be satisfied.

(4) The Executive Officer will apply conditions if the stated fugitive dust control plan measures do not satisfactorily conform to the best available control measures and guidance contained in the Rule 403.1 Implementation Handbook. The conditions necessary to modify the fugitive dust control plan will be provided in writing to the person(s) identified in subparagraph (f)(1)(A). A letter to the Executive Officer stating that such modifications will be incorporated into the fugitive dust control plan shall be deemed sufficient to result in approval of the fugitive dust control plan.

(5) Any fugitive dust control plan approved by the Executive Officer shall be valid for a period of one year from the date of approval. Any approved fugitive dust control plan must be resubmitted annually, at least 30 days prior to the expiration date, or the fugitive dust control plan shall expire as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously approved fugitive dust control plan, the submittal may contain a simple statement of no-change (Form 403NC). Otherwise, a resubmittal must contain all the items specified in subparagraphs (f)(1)(A) through (f)(1)(E).

(g) Wind Monitoring Implementation Requirements

(1) The determination of wind speed conditions in excess of 25 miles per hour, as specified in paragraphs (d)(1) and (d)(5), shall be based on the following criteria:

(A) For facilities with an on-site anemometer:

(i) When the on-site anemometer registers at least two wind gusts in excess of 25 miles per hour within a consecutive 30-minute period. Wind speeds shall be deemed to be below 25 miles per hour if there is no recurring wind gust in excess of 25 miles per hour within a consecutive 30-minute period; or

(B) For facilities without an on-site anemometer:

(i) When wind speeds in excess of 25 miles per hour are forecast to occur in the Coachella Valley for that day. This condition shall apply to the full calendar day for which the forecast is valid. (The Executive Officer shall determine meteorological conditions which will cause wind speeds in excess of 25 miles per hour, and shall issue daily forecasts of expected wind conditions. Such forecasts shall be available to the public); or

(ii) When wind speeds in excess of 25 miles per hour are not forecast to occur by the District, and fugitive dust emissions are visible for a distance of at least 100 feet from the origin of such emissions, and there is visible evidence of wind driven fugitive dust.

(2) Any person who elects to install an on-site anemometer shall:

(A) Notify the Executive Officer no more than 10 days after installing such equipment. The notification shall contain, at a minimum, the person's name, address, telephone number, description of the operation(s), and first day of operation, as specified in the District's Rule 403.1 Implementation Handbook.

(B) Be subject to the provisions of subparagraph (g)(1)(B) for wind speed determinations if equipment outages, malfunctions, or invalid data exceed one hour during active operations on a calendar day.

(h) Recordkeeping

(1) A person subject to the provisions of this rule shall compile written daily records to document the specific actions taken to comply with this Rule. Such records shall be retained for not less than three years and shall be made available to the Executive Officer upon request.

(2) In addition to the provisions of paragraph (h)(1), any person who elects to install an on-site anemometer shall also compile written records. Such records shall contain:

(A) Location, vendor, model, and serial number of the anemometer;

(B) The time of occurrence of any wind gust in excess of 25 miles per hour during hours of active operations;

(C) The actions taken to comply with the provisions of paragraphs (d)(5) and (i)(3), as applicable.

(i) Exemptions

(1) The provisions of this rule shall not apply to ceased or inactive mining operations subject to the requirements of the Surface Mining and Recovery Act (SMARA) of 1975, provided that the provisions of the SMARA Reclamation Plan are implemented by the owner and are at least as stringent as those contained in this rule;

(2) The provisions of paragraphs (d)(2), (d)(3), and (d)(4) shall not apply to:

(A) Any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the Endangered Species Act as determined in writing by the State or federal agency responsible for making such determinations;

(B) Any disturbed surface areas or bulk material deposits with a surface area less than 2,500 square feet;

(C) Non-routine or emergency maintenance of flood control channels and water spreading basins.

(3) The provisions of paragraph (d)(5) shall not apply to agricultural tilling activities or soil mulching activities under the following conditions:

(A) If the prohibitory requirements of this Rule have occurred during six or more hours of active operations on each of two previous consecutive days, then a one-day exemption will be allowed. (These activities would again be subject to the prohibitory requirements of this Rule following this one day exemption.)

(B) If the prohibitory requirements of this Rule have occurred during sixty or more cumulative hours of active operations within a calendar month, then an exemption will be allowed for the remainder of the calendar month. (These activities would again be subject to the prohibitory requirements of this Rule at the start of the following month.)

(C) During periods of precipitation.

(4) The provisions of paragraph (e)(1) shall not apply to any active operation which is required to submit a dust control plan to any city or county government that has adopted a District-approved dust control ordinance.

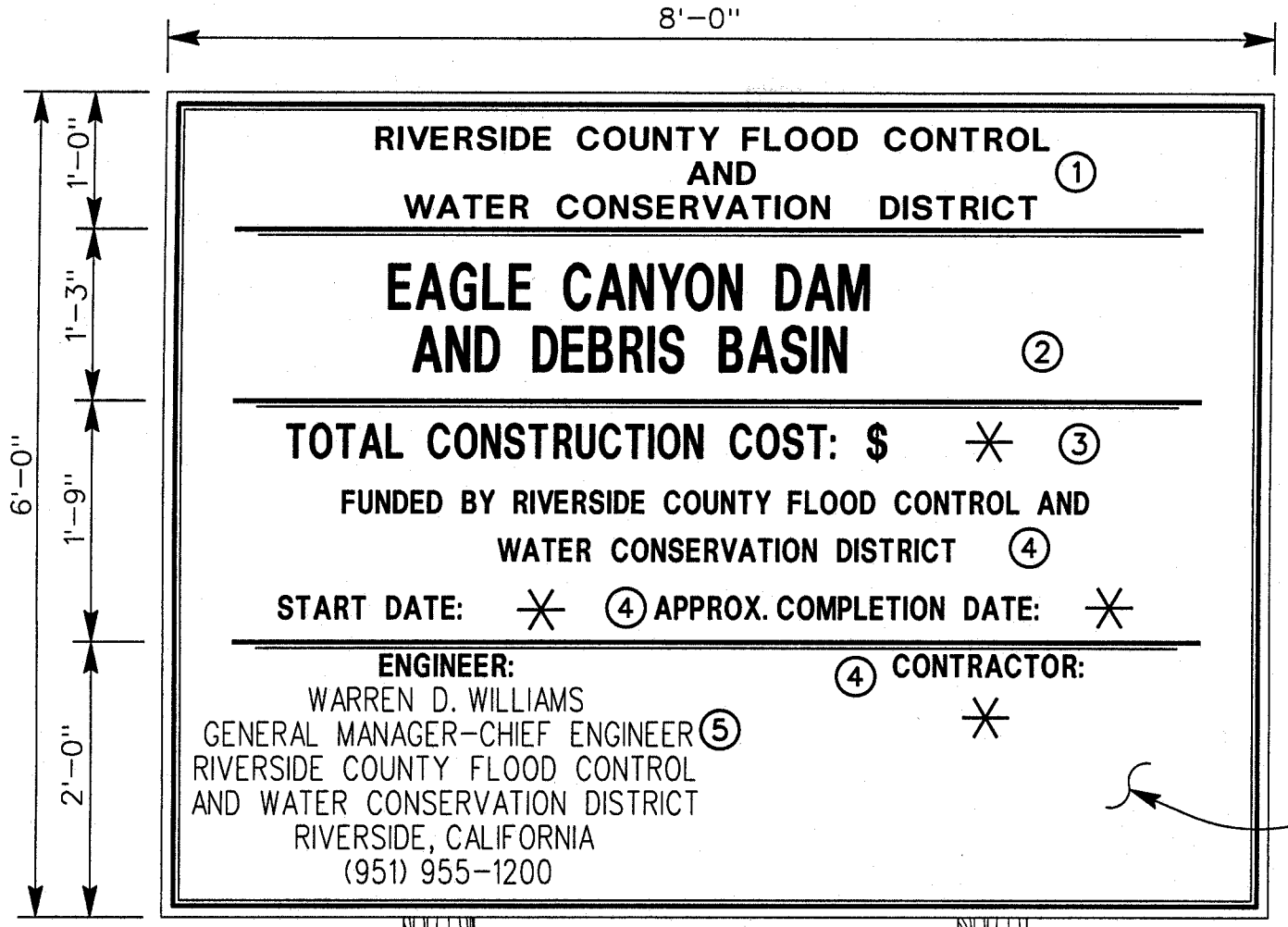
(j) Fees

(1) Any person subject to a fugitive dust control plan submittal pursuant to paragraph (e)(1) shall be assessed applicable filing and evaluation fees pursuant to Rule 306.

(2) The submittal of an annual statement of no-change, pursuant to paragraph (f)(5), shall not be considered as an annual review, and therefore shall not be subject to annual review fees, pursuant to Rule 306.

# APPENDIX "B"

# PROJECT SIGNS




## LETTER SCHEDULE

| | SIZE | COLOR |
|---|---|---|
| 1 | 2" | BLACK |
| 2 | 4" | ROYAL |
| 3 | 3" | ROYAL |
| 4 | 2" | ROYAL |
| 5 | 2" | BLACK |

NOTES:

1. MINIMUM SPACING BETWEEN LINES 1".
2. ✳ -INFO. FURNISHED BY ENGINEER
3. ALL LETTERS FILLED AND CENTERED
4. THE STRIPES ARE GOLD AND BLACK ON WHITE BACKGROUND.

# APPENDIX "B" PROJECT SIGN

# APPENDIX "C"

# LOGS OF SOIL BORINGS AND TEST PIT LOGS

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/23/06 | GROUND ELEV. | 360.0 |
| DATE FINISHED | 2/23/06 | GW DEPTH (FT) | |
| DRILLER | Great West | DRIVE WT. | 8100 lbs |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in |

BORING NO. GBH-201
LOGGED BY NMJ
NOTE Closed-end BPT

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 36 | | 11 | Throttle setting at full throughout entire boring. | | | |
| | | | 14 | | 11 | | | | |
| | | | 14 | | 11 | | | | |
| | | | 15 | | 11 | | | | |
| | | | 21 | | 11 | | | | |
| 5 | 355 | | 25 | | 12 | | | | |
| | | | 22 | | 12 | | | | |
| | | | 20 | | 14 | | | | |
| | | | 17 | | 14 | Supercharger turned on at 8' below ground surface. | | | |
| | | | 18 | | 16 | | | | |
| 10 | 350 | | 18 | | 16 | | | | |
| | | | 17 | | 16 | | | | |
| | | | 17 | | 16 | | | | |
| | | | 19 | | 17 | | | | |
| | | | 27 | | 18 | | | | |
| 15 | 345 | | 38 | | 19 | | | | |
| | | | 50 | | 20 | | | | |
| | | | 35 | | 18 | | | | |
| | | | 38 | | 18 | | | | |
| | | | 43 | | 19 | | | | |
| 20 | 340 | | 45 | | 18 | | | | |
| | | | 50 | | 19 | | | | |
| | | | 56 | | 19 | | | | |
| | | | 75 | | 20 | | | | |
| | | | 94 | | 20 | | | | |
| 25 | 335 | | 104 | | 21 | | | | |
| | | | 87 | | 21 | | | | |
| | | | 76 | | 19 | | | | |
| | | | 73 | | 20 | | | | |
| | | | 82 | | 20 | | | | |
| 30 | 330 | | 82 | | 21 | | | | |
| | | | 93 | | 21 | | | | |
| | | | 114 | | 21 | | | | |
| | | | 158 | | 22 | | | | |
| | | | 127 | | 23 | | | | |
| 35 | 325 | | 131 | | 23 | | | | |
| | | | 133 | | 23 | | | | |
| | | | 166 | | 23 | | | | |
| | | | 181 | | 24 | | | | |
| | | | 171 | | 21 | | | | |

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-1a

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/23/06 | GROUND ELEV. | 360.0 |
| DATE FINISHED | 2/23/06 | GW DEPTH (FT) | |
| DRILLER | Great West | DRIVE WT. | 8100 lbs |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in |

BORING NO. GBH-201
LOGGED BY NMJ
NOTE Closed-end BPT

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 165 | | 20 | | | | |
| | | | 179 | | 21 | | | | |
| | | | 119 | | 21 | | | | |
| | | | 109 | | 22 | | | | |
| | | | 86 | | 22 | | | | |
| 45 | 315 | | 84 | | 22 | | | | |
| | | | 77 | | 22 | | | | |
| | | | 97 | | 21 | | | | |
| | | | 118 | | 21 | | | | |
| | | | 238 | | 23 | | | | |
| 50 | 310 | | 669 | | 25 | Pulled out 1' foot and attempted to re-drive at depth of 50.7' feet. 250 blows for re-drive at 50.7' feet with no progress.<br>End of boring @ 50.7' feet below existing ground surface due to refusal. Hole backfilled with bentonite grout.<br>Bottom of Boring @ 50.7 feet | | | |
| 55 | 305 | | | | | | | | |
| 60 | 300 | | | | | | | | |
| 65 | 295 | | | | | | | | |
| 70 | 290 | | | | | | | | |
| 75 | 285 | | | | | | | | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-1b

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | | |
| DATE STARTED | 2/21/06 | GROUND ELEV. | 362.0 | BORING NO. | GBH-202 |
| DATE FINISHED | 2/21/06 | GW DEPTH (FT) | | LOGGED BY | NMJ |
| DRILLER | Great West | DRIVE WT. | 8100 lbs | NOTE | Closed-end BPT |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 16 | | 12 | Throttle setting at full throughout entire boring. Supercharger running throughout entire boring. | | | |
| | 360 | | 18 | | 13 | | | | |
| | | | 20 | | 13 | | | | |
| | | | 15 | | 13 | | | | |
| 5 | | | 16 | | 13 | | | | |
| | | | 17 | | 13 | | | | |
| | 355 | | 17 | | 14 | | | | |
| | | | 14 | | 14 | | | | |
| | | | 17 | | 14 | | | | |
| 10 | | | 26 | | 15 | | | | |
| | | | 31 | | 16 | | | | |
| | 350 | | 32 | | 17 | | | | |
| | | | 26 | | 16 | | | | |
| | | | 26 | | 17 | | | | |
| 15 | | | 29 | | 17 | | | | |
| | | | 35 | | 17 | | | | |
| | 345 | | 40 | | 18 | | | | |
| | | | 44 | | 19 | | | | |
| | | | 51 | | 19 | | | | |
| 20 | | | 58 | | 19 | | | | |
| | | | 76 | | 18 | | | | |
| | 340 | | 79 | | 20 | | | | |
| | | | 83 | | 20 | | | | |
| | | | 84 | | 19 | | | | |
| 25 | | | 88 | | 20 | | | | |
| | | | 102 | | 19 | | | | |
| | 335 | | 132 | | 20 | | | | |
| | | | 180 | | 20 | | | | |
| | | | 152 | | 20 | | | | |
| 30 | | | 97 | | 21 | | | | |
| | | | 81 | | 21 | | | | |
| | 330 | | 73 | | 22 | | | | |
| | | | 100 | | 21 | | | | |
| | | | 120 | | 22 | | | | |
| 35 | | | 90 | | 22 | | | | |
| | | | 78 | | 21 | | | | |
| | 325 | | 93 | | 22 | | | | |
| | | | 107 | | 22 | | | | |
| | | | 150 | | 22 | | | | |

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-2a

BORING LOG BY 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/21/06 | GROUND ELEV. | 362.0 |
| DATE FINISHED | 2/21/06 | GW DEPTH (FT) | |
| DRILLER | Great West | DRIVE WT. | 8100 lbs |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in |

| | |
|---|---|
| BORING NO. | GBH-202 |
| LOGGED BY | NMJ |
| NOTE | Closed-end BPT |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 145 | | 22 | | | | |
| | | | 112 | | 22 | | | | |
| | 320 | | 96 | | 22 | | | | |
| | | | 94 | | 22 | | | | |
| | | | 96 | | 24 | | | | |
| 45 | | | 97 | | 23 | | | | |
| | | | 92 | | 23 | | | | |
| | 315 | | 103 | | 22 | | | | |
| | | | 120 | | 23 | | | | |
| | | | 154 | | 22 | | | | |
| 50 | | | 149 | | 23 | | | | |
| | | | 160 | | 23 | | | | |
| | 310 | | 177 | | 23 | | | | |
| | | | 166 | | 22 | | | | |
| | | | 140 | | 23 | | | | |
| 55 | | | 156 | | 24 | | | | |
| | | | 139 | | 24 | | | | |
| | 305 | | 88 | | 23 | | | | |
| | | | 93 | | 23 | | | | |
| | | | 152 | | 22 | | | | |
| 60 | | | 133 | | 21 | | | | |
| | | | 116 | | 21 | | | | |
| | 300 | | 130 | | 22 | | | | |
| | | | 164 | | 22 | | | | |
| | | | 176 | | 23 | | | | |
| 65 | | | 153 | | 23 | | | | |
| | | | 135 | | 23 | | | | |
| | 295 | | 134 | | 24 | | | | |
| | | | 122 | | 24 | | | | |
| | | | 176 | | 21 | | | | |
| 70 | | | 177 | | 21 | | | | |
| | | | 222 | | 22 | | | | |
| | 290 | | 223 | | 23 | | | | |
| | | | 220 | | 23 | | | | |
| | | | 215 | | 24 | | | | |
| 75 | | | 170 | | 24 | | | | |
| | | | 142 | | 24 | | | | |
| | 285 | | 140 | | 23 | | | | |
| | | | 188 | | 24 | | | | |
| | | | 397 | | 22 | | | | |

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE
- [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-2b

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/21/06 | GROUND ELEV. | 362.0 |
| DATE FINISHED | 2/21/06 | GW DEPTH (FT) | |
| DRILLER | Great West | DRIVE WT. | 8100 lbs |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in |

BORING NO. GBH-202
LOGGED BY NMJ
NOTE Closed-end BPT

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 432 | | 22 | | | | |
| | | | 341 | | 23 | | | | |
| | 280 | | 243 | | 22 | | | | |
| | | | 182 | | 23 | | | | |
| | | | 188 | | 23 | | | | |
| 85 | | | 210 | | 23 | | | | |
| | | | 274 | | 23 | | | | |
| | 275 | | 833 | | 25 | Refusal encountered at 88' feet below existing ground surface. Additional 243 blows to get to a depth of 88' 1/2". | | | |
| | | | | | | End of boring @ about 88' feet below existing ground surface due to refusal. Hole backfilled with bentonite grout. Bottom of Boring @ 88.5 feet | | | |
| 90 | | | | | | | | | |
| | 270 | | | | | | | | |
| 95 | | | | | | | | | |
| | 265 | | | | | | | | |
| 100 | | | | | | | | | |
| | 260 | | | | | | | | |
| 105 | | | | | | | | | |
| | 255 | | | | | | | | |
| 110 | | | | | | | | | |
| | 250 | | | | | | | | |
| 115 | | | | | | | | | |
| | 245 | | | | | | | | |

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-2c

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | BORING NO. | GBH-203 |
| DATE STARTED | 2/22/06 | GROUND ELEV. | 362.0 | LOGGED BY | NMJ |
| DATE FINISHED | 2/22/06 | GW DEPTH (FT) | | NOTE | Closed-end BPT |
| DRILLER | Great West | DRIVE WT. | 8100 lbs | | |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 5 | | | Throttle setting at full throughout entire boring. | | | |
| | | | 8 | | | | | | |
| | 360 | | 9 | | 14 | | | | |
| | | | 14 | | 14 | | | | |
| | | | 16 | | 14 | | | | |
| 5 | | | 13 | | 11 | | | | |
| | | | 12 | | 11 | | | | |
| | 355 | | 10 | | 10 | | | | |
| | | | 8 | | 8 | | | | |
| | | | 8 | | 9 | | | | |
| 10 | | | 8 | | 13 | | | | |
| | | | 9 | | 14 | | | | |
| | 350 | | 19 | | 15 | | | | |
| | | | 13 | | 14 | | | | |
| | | | 20 | | 12 | | | | |
| 15 | | | 11 | | 10 | | | | |
| | | | 11 | | 12 | | | | |
| | 345 | | 13 | | 14 | | | | |
| | | | 19 | | 15 | | | | |
| | | | 26 | | 15 | | | | |
| 20 | | | 36 | | 16 | | | | |
| | | | 38 | | 15 | | | | |
| | 340 | | 39 | | 16 | | | | |
| | | | 43 | | 16 | | | | |
| | | | 49 | | 16 | | | | |
| 25 | | | 59 | | 18 | Supercharger started at depth of 26' below ground surface. | | | |
| | | | 107 | | 20 | | | | |
| | 335 | | 118 | | 20 | | | | |
| | | | 100 | | 21 | | | | |
| | | | 222 | | 19 | | | | |
| 30 | | | 335 | | 21 | Pulled out 3' and re-drove at depth of 31' below ground surface. | | | |
| | | | 292 | | 23 | | | | |
| | 330 | | 318 | | 23 | | | | |
| | | | 235 | | 23 | | | | |
| | | | 162 | | 23 | | | | |
| 35 | | | 166 | | 24 | | | | |
| | | | 213 | | 24 | | | | |
| | 325 | | 185 | | 23 | | | | |
| | | | 134 | | 23 | | | | |
| | | | 112 | | 22 | | | | |

SAMPLE TYPES:
- [R] RING (DRIVE) SAMPLE
- [S] SPT (SPLIT SPOON) SAMPLE
- [B] BULK SAMPLE
- [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

**GENTERRA CONSULTANTS, INC.**

FIGURE A-3a

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | | |
| DATE STARTED | 2/22/06 | GROUND ELEV. | 362.0 | BORING NO. | GBH-203 |
| DATE FINISHED | 2/22/06 | GW DEPTH (FT) | | LOGGED BY | NMJ |
| DRILLER | Great West | DRIVE WT. | 8100 lbs | NOTE | Closed-end BPT |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 114 | | 22 | | | | |
| | | | 101 | | 21 | | | | |
| | 320 | | 76 | | 21 | | | | |
| | | | 80 | | 23 | | | | |
| | | | 95 | | 22 | | | | |
| 45 | | | 119 | | 23 | | | | |
| | | | 94 | | 23 | | | | |
| | 315 | | 83 | | 22 | | | | |
| | | | 84 | | 22 | | | | |
| | | | 146 | | 21 | | | | |
| 50 | | | 164 | | 24 | | | | |
| | | | 142 | | 23 | | | | |
| | 310 | | 145 | | 23 | | | | |
| | | | 179 | | 21 | | | | |
| | | | 188 | | 25 | | | | |
| 55 | | | 187 | | 24 | | | | |
| | | | 167 | | 23 | | | | |
| | 305 | | 165 | | 22 | | | | |
| | | | 127 | | 24 | | | | |
| | | | 211 | | 19 | | | | |
| 60 | | | 177 | | 19 | | | | |
| | | | 167 | | 20 | | | | |
| | 300 | | 186 | | 22 | | | | |
| | | | 144 | | 23 | | | | |
| | | | 155 | | 23 | | | | |
| 65 | | | 162 | | 22 | | | | |
| | | | 153 | | 23 | | | | |
| | 295 | | 156 | | 23 | | | | |
| | | | 212 | | 22 | | | | |
| | | | 272 | | 22 | | | | |
| 70 | | | 285 | | 22 | | | | |
| | | | 390 | | 24 | | | | |
| | 290 | | 559 | | 24 | | | | |
| | | | 621 | | 24 | Pulled out 1' and re-drove at depth 73.9' below ground surface.<br>169 blows for 0.1".<br>472 Blows for 0.5' from 74' to 74.5' below ground surface.<br>End of boring @ about 74.5' feet below existing ground surface due to refusal. Hole backfilled with bentonite grout.<br>Bottom of Boring @ 74.5 feet | | | |
| 75 | | | | | | | | | |
| | 285 | | | | | | | | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

**GENTERRA CONSULTANTS, INC.**

FIGURE A-3b

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/20/06 | GROUND ELEV. | 364.0 |
| DATE FINISHED | 2/20/06 | GW DEPTH (FT) | |
| DRILLER | Great West | DRIVE WT. | 8100 lbs |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in |

| | |
|---|---|
| BORING NO. | GBH-204 |
| LOGGED BY | NMJ |
| NOTE | Closed-end BPT |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 17 | | | Throttle setting is at full throughout the entire boring.Supercharger running throughout the entire boring. | | | |
| | | | 14 | | | | | | |
| | | | 11 | | | | | | |
| | 360 | | 9 | | 10 | | | | |
| | | | 11 | | 10 | | | | |
| 5 | | | 9 | | 10 | | | | |
| | | | 9 | | 12 | | | | |
| | | | 12 | | 15 | | | | |
| | 355 | | 12 | | 14 | | | | |
| | | | 16 | | 15 | | | | |
| 10 | | | 14 | | 16 | | | | |
| | | | 16 | | 17 | | | | |
| | | | 25 | | 18 | | | | |
| | 350 | | 27 | | 18 | | | | |
| | | | 22 | | 16 | | | | |
| 15 | | | 22 | | 16 | | | | |
| | | | 33 | | 18 | | | | |
| | | | 59 | | 20 | | | | |
| | 345 | | 61 | | 21 | | | | |
| | | | 79 | | 20 | | | | |
| 20 | | | 82 | | 21 | | | | |
| | | | 87 | | 22 | | | | |
| | | | 118 | | 20 | | | | |
| | 340 | | 141 | | 21 | | | | |
| | | | 162 | | 22 | | | | |
| 25 | | | 220 | | 21 | | | | |
| | | | 286 | | 22 | | | | |
| | | | 235 | | 21 | | | | |
| | 335 | | 218 | | 22 | | | | |
| | | | 241 | | 22 | | | | |
| 30 | | | 179 | | 22 | | | | |
| | | | 180 | | 22 | | | | |
| | | | 183 | | 22 | | | | |
| | 330 | | 189 | | 23 | | | | |
| | | | 186 | | 22 | | | | |
| 35 | | | 194 | | 23 | | | | |
| | | | 158 | | 23 | | | | |
| | | | 130 | | 23 | | | | |
| | 325 | | 114 | | 22 | | | | |
| | | | 124 | | 22 | | | | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-4a

BORING LOG BH 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | | |
| DATE STARTED | 2/20/06 | GROUND ELEV. | 364.0 | BORING NO. | GBH-204 |
| DATE FINISHED | 2/20/06 | GW DEPTH (FT) | | LOGGED BY | NMJ |
| DRILLER | Great West | DRIVE WT. | 8100 lbs | NOTE | Closed-end BPT |
| TYPE OF DRILL RIG | Becker Rig AP1000 | DROP | 36 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT | LITHOLOGY | Bounce Chamber Pressure (psi) | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | | 128 | | 22 | | | | |
| | | | 163 | | 22 | | | | |
| | | | 168 | | 22 | | | | |
| | | | 138 | | 24 | | | | |
| | 320 | | 114 | | 23 | | | | |
| 45 | | | 105 | | 23 | | | | |
| | | | 98 | | 24 | | | | |
| | | | 118 | | 24 | | | | |
| | | | 161 | | 23 | | | | |
| | 315 | | 251 | | 22 | | | | |
| 50 | | | 301 | | 23 | | | | |
| | | | 244 | | 24 | | | | |
| | | | 310 | | 25 | | | | |
| | | | 290 | | 25 | | | | |
| | 310 | | 228 | | 24 | | | | |
| 55 | | | 168 | | 25 | | | | |
| | | | 164 | | 25 | | | | |
| | | | 159 | | 25 | | | | |
| | | | 151 | | 25 | | | | |
| | 305 | | 360 | | 24 | | | | |
| 60 | | | 471 | | 23 | | | | |
| | | | 393 | | 24 | | | | |
| | | | 588 | | 25 | | | | |
| | | | 603 | | 26 | | | | |
| | 300 | | | | | End of boring @ about 63.5' feet below existing ground surface due to refusal. Hole backfilled with bentonite grout. Bottom of Boring @ 63.5 feet | | | |
| 65 | | | | | | | | | |
| | 295 | | | | | | | | |
| 70 | | | | | | | | | |
| | 290 | | | | | | | | |
| 75 | | | | | | | | | |
| | 285 | | | | | | | | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-4b

BORING LOG BY 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | BORING NO. | GMR-301 |
| DATE STARTED | 2/27/06 | GROUND ELEV. | 362.0 | LOGGED BY | JWK |
| DATE FINISHED | 2/28/06 | GW DEPTH (FT) | | NOTE | |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs | | |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * (Recovery) ** | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 360 | | | | | **FILL**<br>SILTY SAND - slightly mosit, light brown, some debris. | | | |
| 5 | 355 | R | 29 (14/18) | | SW | WELL-GRADED SAND with Gravel - slightly moist, medium to coarse grained, light brown, some debris. | 2.9 | 124.0 | |
| 10 | 350 | R | 100/11" (9/11) | | | trace rock and concrete frgaments and debris. | | | |
| 15 | 345 | R | 52 (12/18) | | SW | gravel up to 1/4" in size, some debris. | 2.7 | 124.8 | |
| 20 | 340 | T | (4/14) | | | **ALLUVIUM**<br>POORLY GRADED SAND - dense, slightly moist, light brown, some gravel<br>Pushed Shelby Tube 12-14", Recovery about 4". | | | |
| 25 | 335 | R | 50/5" (0/5) | | SW | WELL-GRADED SAND - dense, slightly moist, light brown, medium to coarse grained, trace granite fragments. | | | |
| 30 | 330 | S | 85/10" (10/10) | | | WELL-GRADED SAND with Gravel - very dense, slightly moist, medium brown, fine to coarse grained, sub angular gravel up to 1/8" in size, micacious. | 10.2 | | |
| 35 | 325 | R | 85/11" (10/11) | | | Medium to coarse grained, sub angular gravel up to 1/4" in size, micacious, trace quartz. | 3.9 | 135.4 | |

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-5a

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | BORING NO. | GMR-301 |
| DATE STARTED | 2/27/06 | GROUND ELEV. | 362.0 | LOGGED BY | JWK |
| DATE FINISHED | 2/28/06 | GW DEPTH (FT) | | NOTE | |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs | | |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * (Recovery) ** | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | S | 53 (18/18) | | SW | WELL-GRADED SAND with Gravel - very dense, moist, light brown, fine to coarse grained, micacious, trace quartz, sub-angular gravel up to 1/8" in size. | 12.3 | | |
| | 320 | | | | | Unable to advance Shelby Tube | | | |
| 45 | | R | 90/10" (9/10) | | | Medium to coarse grained, micacious, sub-angular gravel up to 1/2" in size. | 7.7 | 138.9 | |
| | 315 | | | | | | | | |
| 50 | | S | 76 (17/18) | | | micacious, sub-angular gravel up to 1/4" in size, trace quartz. | | | |
| | 310 | | | | | | | | |
| 55 | | | | | | | | | |
| | 305 | | | | | | | | |
| 60 | | R | 50-5" (5/5) | | | moist, coarse grained, angular gravel up to 1/2" in size. | 10.2 | 131.8 | |
| | 300 | | | | | | | | |
| 65 | | | | | | | | | |
| | 295 | | | | | | | | |
| 70 | | R | 100/10" (10/10) | | | micacious, sub-angular gravel up to 1/4" in size, trace quartz. | 8.6 | 132.3 | |
| | 290 | | | | | | | | |
| 75 | | | | | | | | | |
| | 285 | | | | | | | | |

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

**GENTERRA CONSULTANTS, INC.**

FIGURE A-5b

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/27/06 | GROUND ELEV. | 362.0 |
| DATE FINISHED | 2/28/06 | GW DEPTH (FT) | |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in |

BORING NO. GMR-301
LOGGED BY JWK
NOTE

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * (Recovery) ** | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | | R | 50/1.5" (0.5/1.5) | | | Coarse grained with some gravel, micacious. (300 lb hammer used to drive the sampler, no ring samples recovered, small bag sample collected) Advanced 3-inch rock core to depth of 85', No recovery. Continued boring with rotary wash. | 12.0 | | |
| 280 | | | | | | | | | |
| 85 | | | | | | | | | |
| 275 | | | | | | | | | |
| 90 | | R | 90/10" (10/10) | | | very dense, some sub-angluar gravel up to 1/8" in size | 6.9 | 124.2 | |
| 270 | | | | | | very hard and very slow drilling | | | |
| 95 | | | | | | | | | |
| 265 | | | | | | Note: * BLOWS/FT represents blows required to drive the last 12 inches of the sample. ** Recovery is indicated as recovered sample length in inches divided by length of sample driven in inches. End of Boring at 96' due to refusal. Water not encountered. Borehole converted into monitoring well GMR-301 after P-S suspension logging completed on 2/28/06. Bottom of Boring @ 96 feet | | | |
| 100 | | | | | | | | | |
| 260 | | | | | | | | | |
| 105 | | | | | | | | | |
| 255 | | | | | | | | | |
| 110 | | | | | | | | | |
| 250 | | | | | | | | | |
| 115 | | | | | | | | | |
| 245 | | | | | | | | | |

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-5c

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | | |
| DATE STARTED | 2/24/06 | GROUND ELEV. | 361.0 | BORING NO. | GMR-302 |
| DATE FINISHED | 2/24/06 | GW DEPTH (FT) | | LOGGED BY | JWK |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs | NOTE | |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * (Recovery) ** | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | 360 | | | | | **FILL**<br>SILTY SAND - dry, light brown, some debris. | | | |
| | | | | | | **ALLUVIUM** | | | |
| 5 | 355 | R | 18 (16/18) | | SW | WELL-GRADED SAND with Gravel - medium dense, slightly moist, light brown, coarse grained, angular gravel up to 1/4" in size, micacious. | 4.3 | 119.1 | |
| 10 | 350 | R | 25 (18/18) | | | Medium to coarse grained, micacious, trace sub-angular gravel up to 1/2" in size. | 4.1 | 116.5 | |
| 15 | 345 | R | 32 (16/18) | | SM | SILTY SAND - medium dense, slightly moist, medium brown, fine to medium grained, micacious. | 4.0 | 120.9 | |
| 20 | 340 | S | 19 (18/18) | | SW | WELL-GRADED SAND with Gravel - medium dense, moist, medium brown, micacious, trace quartz, rounded gravel up to 1/2" in size. | 12.7 | | |
| 25 | 335 | R | 46 (17/18) | | | Dense, slightly moist, some gravel. | 3.2 | 119.7 | |
| 30 | 330 | S | 62 (18/18) | | | Angular gravel up to 1/4" in size, micacious. | 11.9 | | |
| 35 | 325 | R | 95/11" (9/11) | | | Very dense, slightly moist, medium to coarse grained with sub-angular gravel, micacious, quartz pieces. | 5.2 | 132.1 | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

GENTERRA CONSULTANTS, INC.

FIGURE A-6a

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | |
|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam |
| DATE STARTED | 2/24/06 | GROUND ELEV. | 361.0 |
| DATE FINISHED | 2/24/06 | GW DEPTH (FT) | |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in |
| BORING NO. | GMR-302 | | |
| LOGGED BY | JWK | | |
| NOTE | | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * (Recovery) ** | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | 320 | S | 50/5.5" (5.0/5.5) | | SW | Very dense, slightly moist, fragments of rock and gravel, dark gray with white pieces. | 10.7 | | |
| 45 | 315 | R | 87/11" (10/11) | | | Micacious, angular gravel up to 1/4" in size. | 6.6 | 133.1 | |
| 50 | 310 | S | 81 (16/18) | | | Fine to coarse grained, medium brown, some rounded gravel up to 1/4" in size. | 12.0 | | |
| 55 | 305 | R | 95/10" (9/10) | | | Some sub-angular gravel up to 1/4" in size | 9.0 | 141.7 | |
| 60 | 300 | S | 85/10" (8/10) | | | Medium to coarse grained, trace sub-angular gravel up to 1/4" in size | 2.5 | | |
| 65 | 295 | | | | | | | | |
| 70 | 290 | R | 90/11" (10/11) | | | Coarse grained | 6.3 | 131.7 | |
| 75 | 285 | | | | | | | | |
| | | R | 98/8" | | | Trace rounded gravel up to 1" in size. | 7.9 | 138.3 | |

SAMPLE TYPES:
- R RING (DRIVE) SAMPLE
- S SPT (SPLIT SPOON) SAMPLE
- B BULK SAMPLE
- T TUBE SAMPLE

Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

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FIGURE A-6b

BORING LOG 296-RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

# BORING LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 296-RCF | PROJECT NAME | Eagle Canyon Dam | BORING NO. | GMR-302 |
| DATE STARTED | 2/24/06 | GROUND ELEV. | 361.0 | LOGGED BY | JWK |
| DATE FINISHED | 2/24/06 | GW DEPTH (FT) | | NOTE | |
| DRILLER | C & L Drilling | DRIVE WT. | 140 lbs | | |
| TYPE OF DRILL RIG | Mud Rotary | DROP | 30 in | | |

| DEPTH (feet) | ELEV. | SAMPLE TYPE | BLOWS/FT * ** (Recovery) | LITHOLOGY | GROUP SYMBOL | GEOTECHNICAL DESCRIPTION | MOISTURE CONT. (%) | DRY (pcf) DENSITY | OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|
| | 280 | | (8/8) | | | Hard drilling and refusal at 82' below ground surface. Groundwater not encountered. Hole backfilled with bentonite grout. Bottom of Boring @ 82 feet | | | |
| 85 | 275 | | | | | | | | |
| 90 | 270 | | | | | | | | |
| 95 | 265 | | | | | | | | |
| 100 | 260 | | | | | | | | |
| 105 | 255 | | | | | | | | |
| 110 | 250 | | | | | | | | |
| 115 | 245 | | | | | | | | |

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

▼ Groundwater

MAX - Max. Density
CU - Con. Undrained Triaxial
PERM - Permeability
DS - Direct Shear
SA - Sieve Analysis
ATT - Atterberg Limits
CON - Consolidation

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FIGURE A-6c

BORING LOG RCF EAGLE CYN.GPJ TESTING.GDT 7/12/06

| MAJOR DIVISIONS | | | GROUP SYMBOLS | TYPICAL NAMES |
|---|---|---|---|---|
| COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size) | GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size) | CLEAN GRAVELS (Little or no fines) | GW | Well graded gravels, gravel - sand mixtures, little or no fines. |
| | | | GP | Poorly graded gravels or grave - sand mixtures, little or no fines. |
| | | GRAVELS WITH FINES (Appreciable amount of fines) | GM | Silty gravels, gravel - sand - silt mixtures. |
| | | | GC | Clayey gravels, gravel - sand - clay mixtures. |
| | SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size) | CLEAN SANDS (Little or no fines) | SW | Well graded sands, gravelly sands, little or no fines. |
| | | | SP | Poorly graded sands or gravelly sands, little or no fines. |
| | | SANDS WITH FINES (Appreciable amount of fines) | SM | Silty sands, sand - silt mixtures |
| | | | SC | Clayey sands, sand - clay mixtures. |
| FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size) | SILTS AND CLAYS (Liquid limit LESS than 50) | | ML | Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity. |
| | | | CL | Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays. |
| | | | OL | Organic silts and organic silty clays of low plasticity. |
| | SILTS AND CLAYS (Liquid limit GREATER than 50) | | MH | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts. |
| | | | CH | Inorganic clays of high plasticity, fat clays |
| | | | OH | Organic clays of medium to high plasticity, organic silts. |
| HIGHLY ORGANIC SOILS | | | PT | Peat and other highly organic soils. |

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

| SILT OR CLAY | SAND | | | GRAVEL | | Cobbles | Boulders |
|---|---|---|---|---|---|---|---|
| | Fine | Medium | Coarse | Fine | Coarse | | |

No.200 No.40 No.10 No.4 3/4" 3" 12"

U.S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

| | | | |
|---|---|---|---|
| | Undisturbed Sample | | Auger Cuttings |
| | Split Spoon Sample | | Bulk Sample |
| | Rock Core | | Sampler |
| | Dilatometer | | Pressure Meter |
| | Packer | | No Recovery |
| | Water Level at Time of Drilling | | Stabilized Water Level |

Correlation of Standard Penetration Test (SPT) Resistance with Relative Density and Consistency

| SAND & GRAVEL | | SILT & CLAY | |
|---|---|---|---|
| No. of Blows | Relative Density | No. of Blows | Consistency |
| 0 - 4 | Very Loose | 0 - 1 | Very Soft |
| 5 - 10 | Loose | 2 - 4 | Soft |
| 11 - 30 | Medium Dense | 5 - 8 | Medium Stiff |
| 31 - 50 | Dense | 9 - 15 | Stiff |
| Over 50 | Very Dense | 16 - 30 | Very Stiff |
| | | Over 31 | Hard |

## KEY TO SYMBOLS AND DESCRIPTIONS

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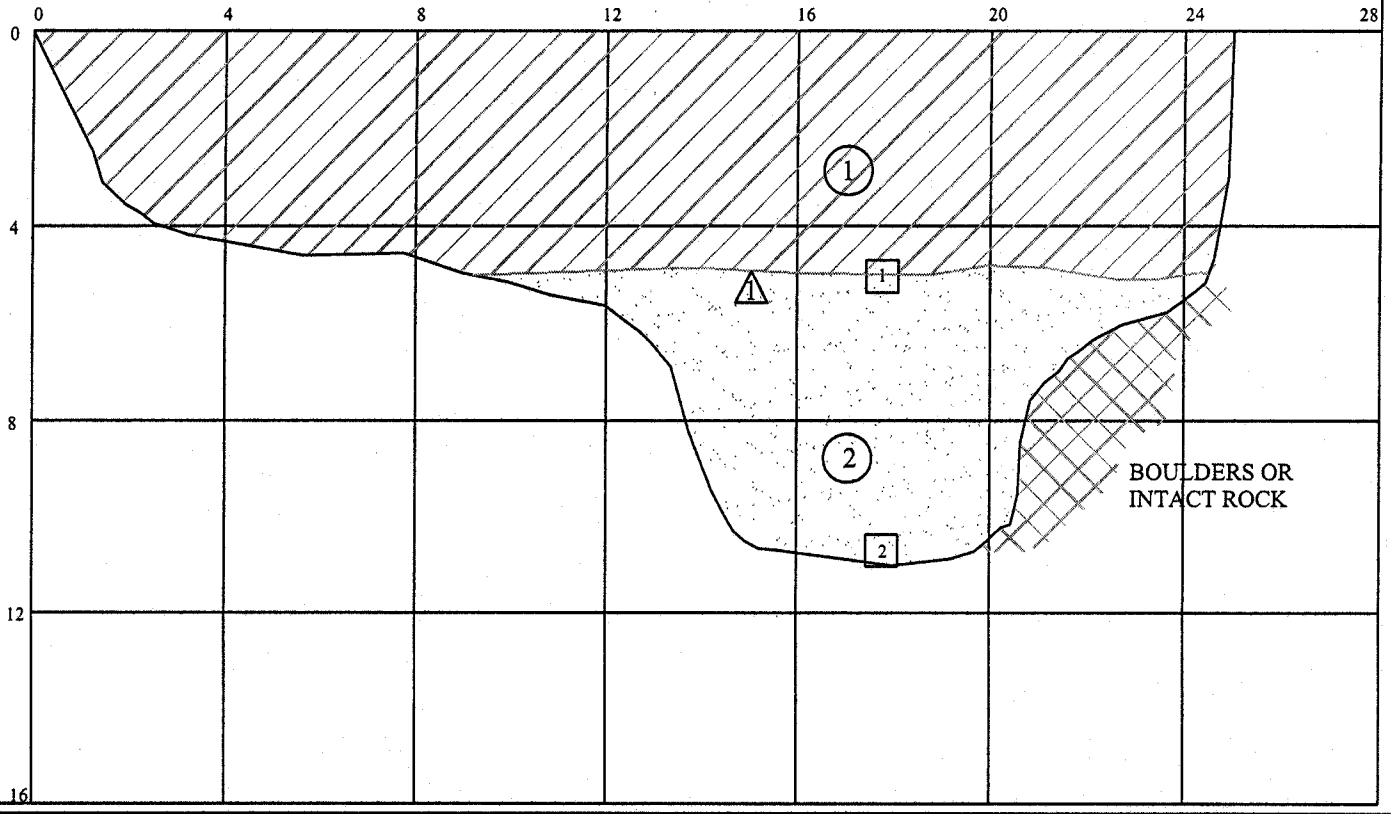
| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-5.0 | (1) | FILL (SP)<br>Tan, coarse, subangular and subrounded sand, <10% fines, abundant angular cobbles, gravel; some roots, lenses and pockets of coarse clean sand, dry, loose, abundant angular gravel, cobbles, scattered pockets of carbon |
| 5.0-11.0 | (2) | SAND (SW-SM)<br>Medium brown, fine to medium grained, little to no gravel, slightly silty, moist, medium dense |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE
- △ SAND CONE TEST

SW — Bearing N15° E — NE

DEPTH/WIDTH (FT)




1 In Place %M = 6.8

2 In Place %M = 2.9

SAND CONE TEST RESULTS

| %M | Dry Density |
|---|---|
| 2.1 | 96.9 |

0 — 4

SCALE FT.

FEBRUARY 16, 2006

DATE LOGGED

MW

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| | | | | |
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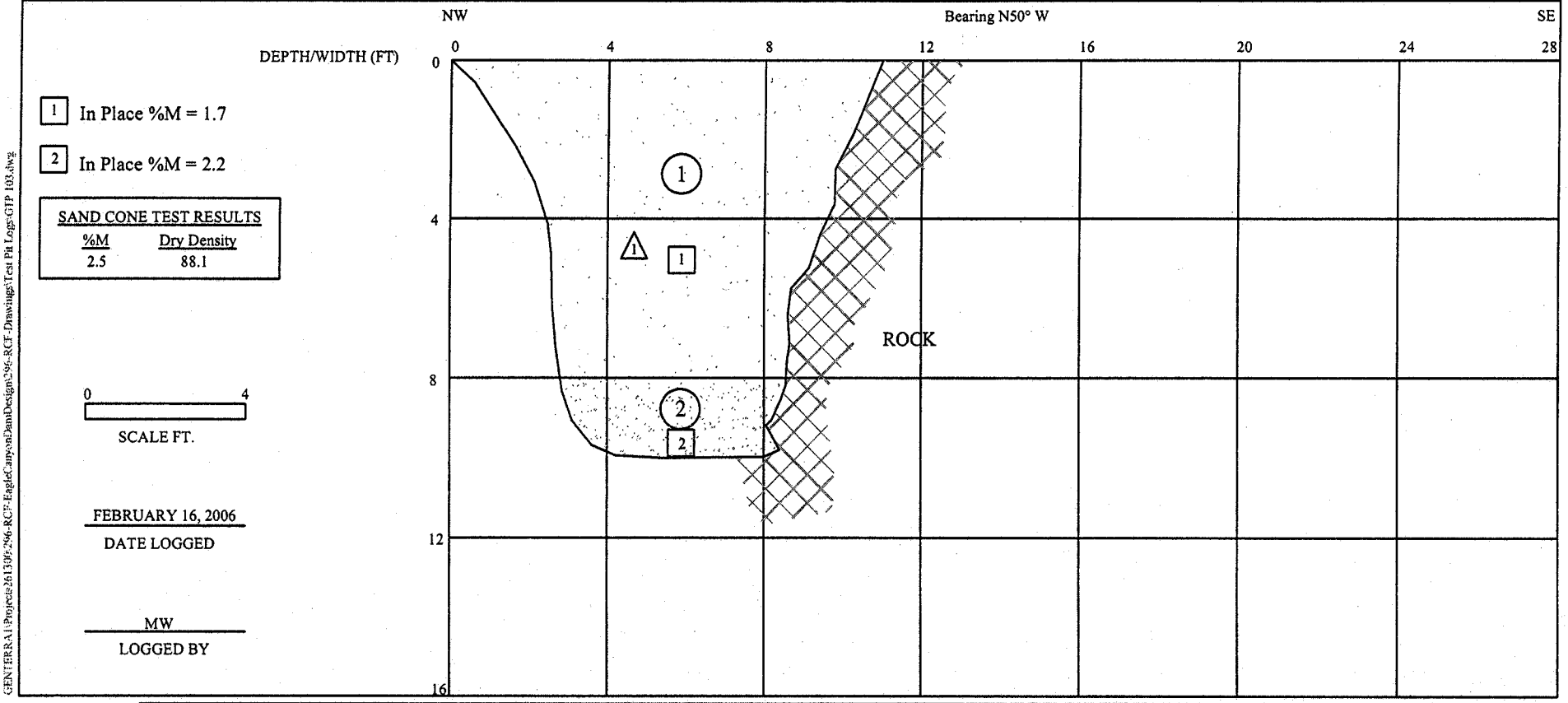
| | | | PROJECT | DATE | FIGURE |
| | | | 296-RCF | MAY 2006 | A-8 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-8.0 | (1) | SAND AND GRAVEL (SP/GP)<br>Course mixture, <5% fines, moderately moist, moderately loose near surface, angular cobble and boulder sizes adjacent to rock face (slopewash) |
| 8.0-10.0 | (2) | SAND AND GRAVEL (SP/GP)<br>Becomes more brown color, slight increase in fines, mostly as coatings on course particles (slopewash) |

## LEGEND

- ○ LAYER NUMBER
- □ BAG SAMPLE
- △ SAND CONE TEST




[1] In Place %M = 1.7

[2] In Place %M = 2.2

SAND CONE TEST RESULTS

| %M | Dry Density |
|---|---|
| 2.5 | 88.1 |

0 — 4

SCALE FT.

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DATE LOGGED

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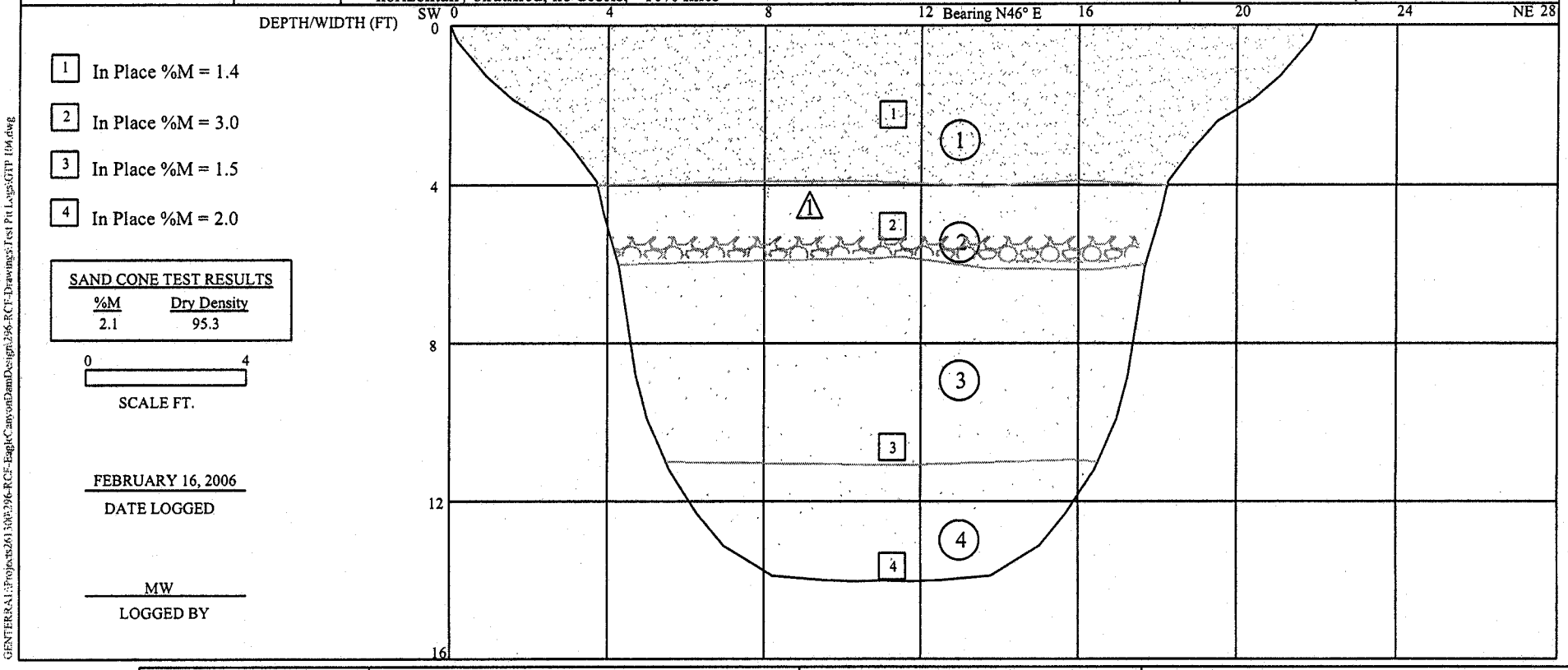
# TEST PIT LOG GTP-103

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-9 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-4.0 | 1 | SAND (SP) Tan to gray, coarse, angular, scattered angular gravel, cobbles, dry, loose, horizontally stratified, abundant cobble sizes in upper 2', <5% fines, cobble layer at 3', no debris |
| 4.0-6.0 | 2 | SAND (SP) Tan/Brown, medium to coarse, angular to subrounded, <5% fines, dry, loose scattered angular to subrounded cobbles, boulders, cobble layer at 5'-6', no debris |
| 6.0-11.0 | 3 | SAND (SP) Grades few cobbles, no boulders, tan/brown, poorly graded medium to course, moderately dry, loose, horizontally stratified, no debris, <10% fines |
| 11.0-14.0 | 4 | SAND (SP) Grades few cobbles, no boulders, tan/brown, poorly graded medium to course, moderately dry, loose, horizontally stratified, no debris, <10% fines |

## LEGEND

- ○ LAYER NUMBER
- □ BAG SAMPLE
- △ SAND CONE TEST




1 In Place %M = 1.4

2 In Place %M = 3.0

3 In Place %M = 1.5

4 In Place %M = 2.0

| SAND CONE TEST RESULTS | |
|---|---|
| %M | Dry Density |
| 2.1 | 95.3 |

0 4

SCALE FT.

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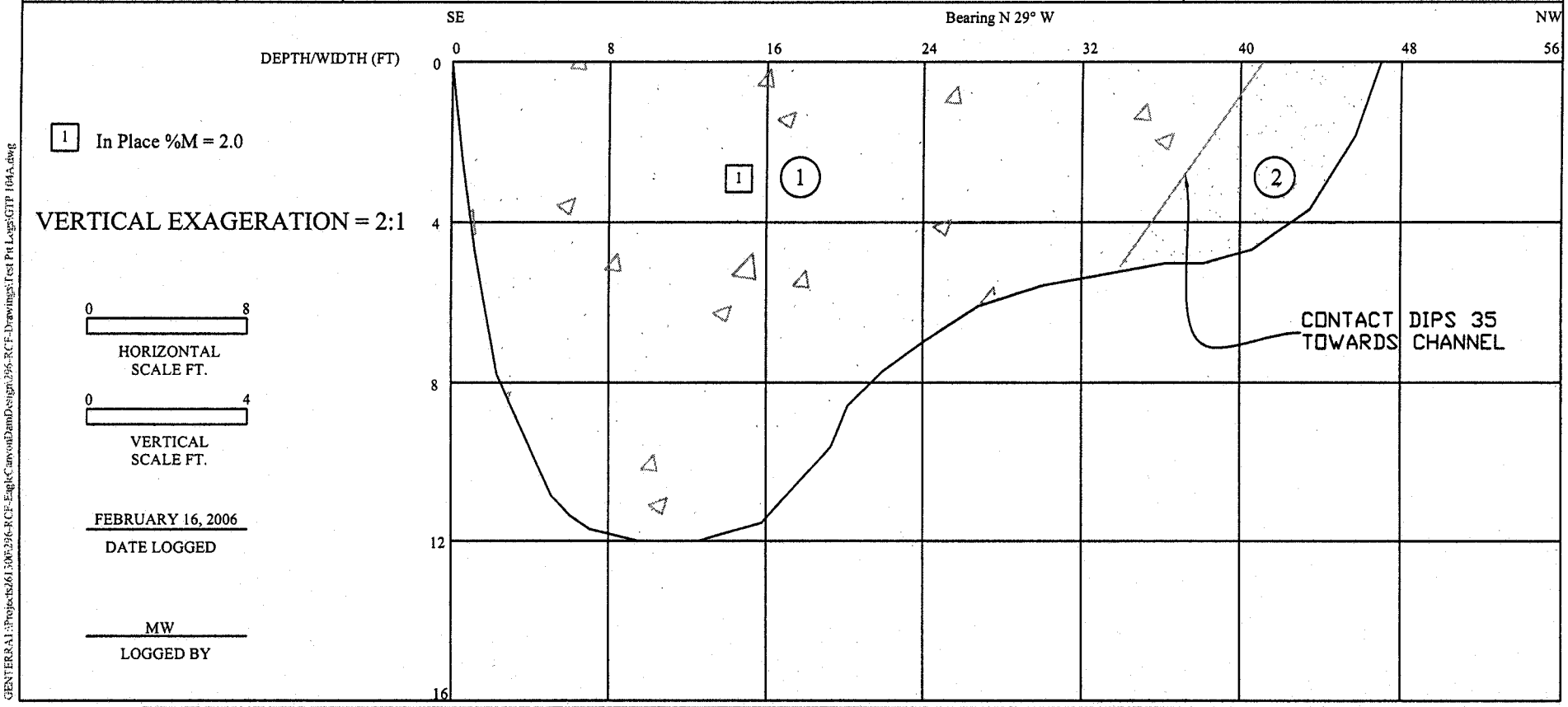
# TEST PIT LOG GTP-104

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-10 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-12.0 | (1) | FILL (SP)<br>Tan, medium to coarse grained sand, angular, abundant cobble and boulder size frags, concrete debris, no horizontal stratification, dry, loose, little to no fines, scattered asphalt chunks, plastic pipe debris, metal wire debris |
| 0-5.0 | (2) | ALLUVIUM (SP)<br>Tan, coarse sand and gravel,horizontally stratified, dry at surface, moderately moist below 1 ft., loose at surface to moderately dense at bottom |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE

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| | | | |
|---|---|---|---|
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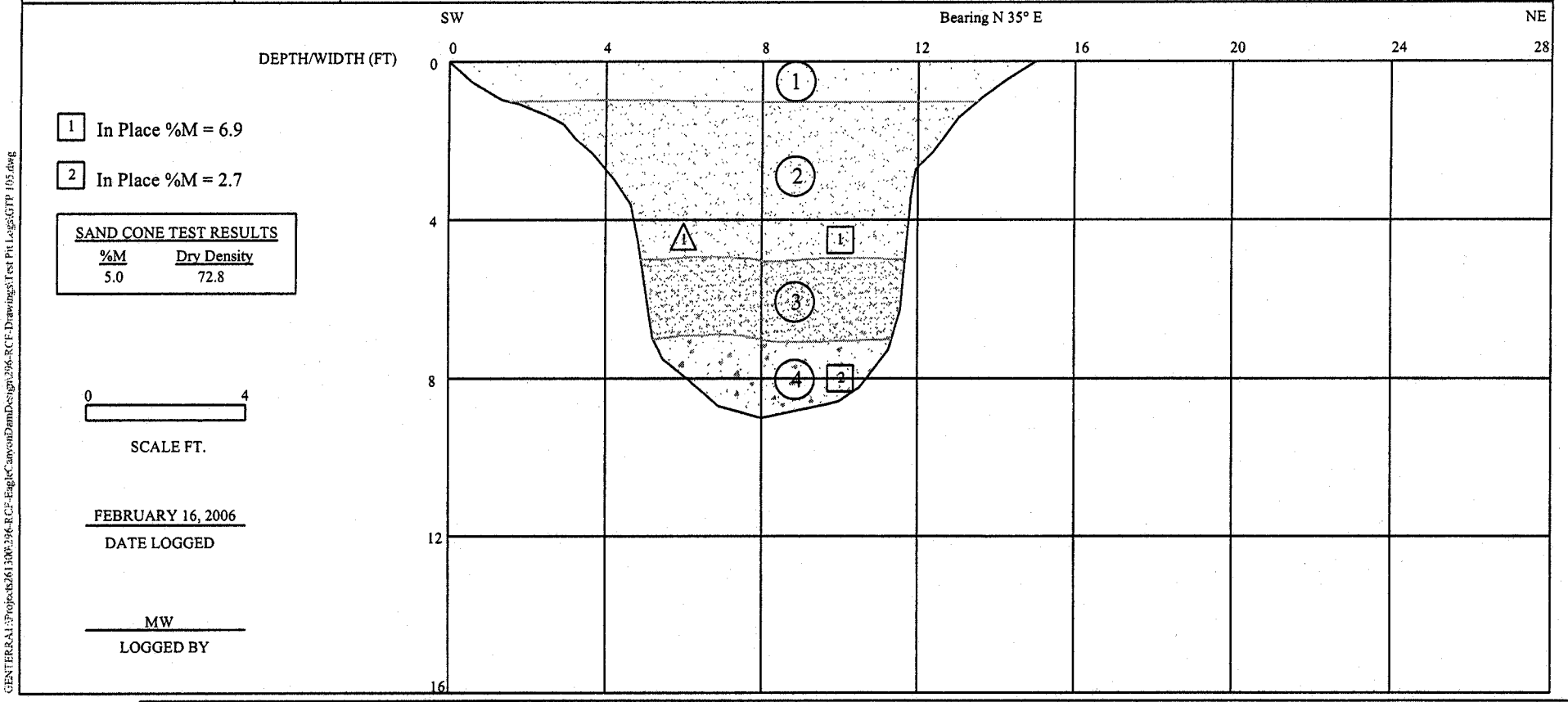
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-11 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-1 | 1 | ALLUVIUM, SAND (SW)<br>Tan, fine to coarse, dry, loose, grades moist at 0.5' |
| 1-5 | 2 | SILTY FINE SAND (SM)<br>Tan/brown, moist, moderately soft, includes lenses of clean coarse sand 1"-3" thick, discontinuous |
| 5-7 | 3 | COARSE SAND (SP) |
| 7-9 | 4 | Cobbles, boulders, subangular to subrounded fines as coating on larger clasts (buried slopewash) |

## LEGEND

- ○ LAYER NUMBER
- □ BAG SAMPLE
- △ SAND CONE TEST




1 In Place %M = 6.9

2 In Place %M = 2.7

| SAND CONE TEST RESULTS | |
|---|---|
| %M | Dry Density |
| 5.0 | 72.8 |

0 4

SCALE FT.

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# TEST PIT LOG GTP-105

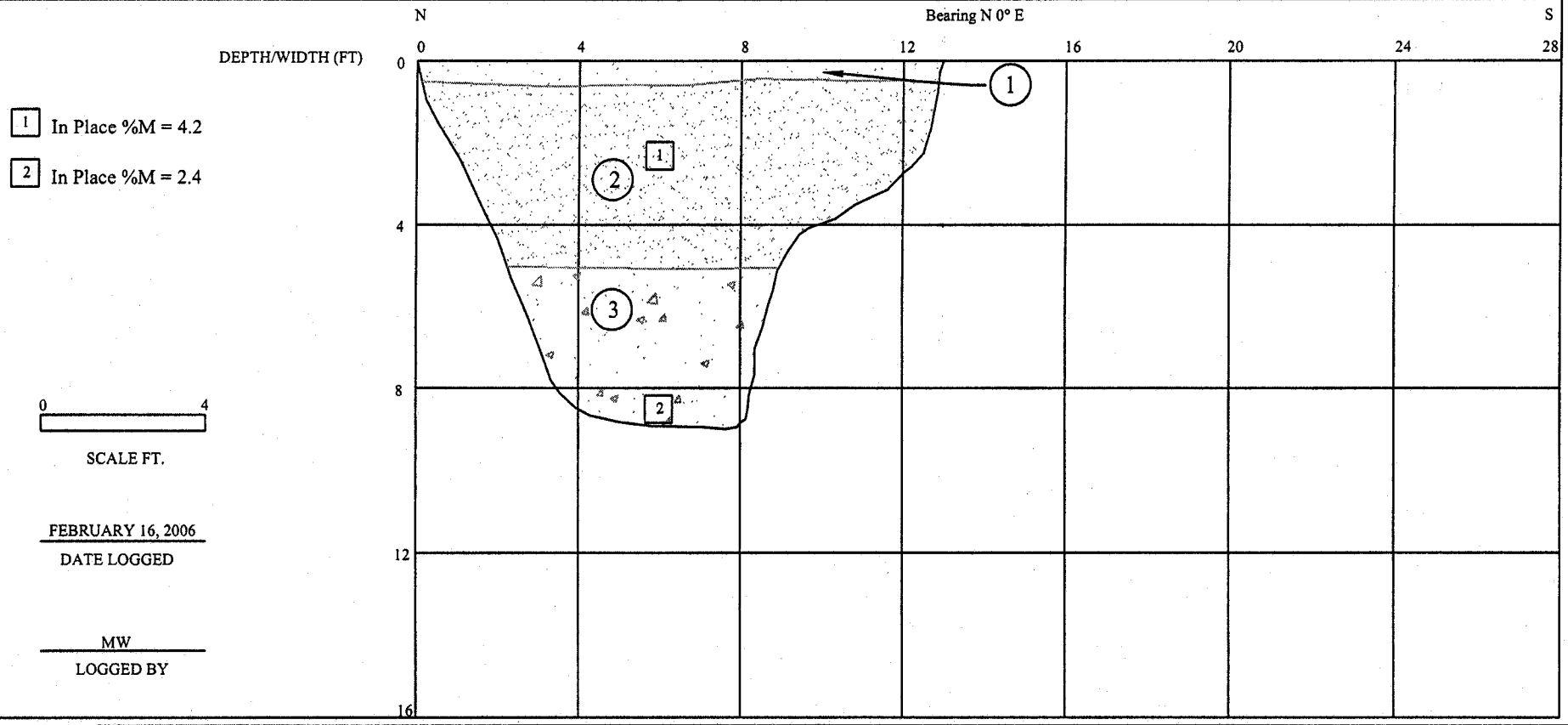
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-12 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-0.5 | (1) | SAND (SP)<br>Tan to gray, coarse, dry, loose |
| 0.5-5.0 | (2) | SAND (SM)<br>Medium brown, silty, fine grained, moderately moist, soft, discontinuous thin lenses of clean coarse sand (1"-3") and continuous, scattered angular cobbles |
| 5.0-9.0 | (3) | SAND (SP)<br>Medium brown, large angular rock fragments (buried slopewash) in matrix of fine to coarse sand |

## LEGEND

○ LAYER NUMBER

□ BAG SAMPLE




1 In Place %M = 4.2

2 In Place %M = 4.2

0 4

SCALE FT.

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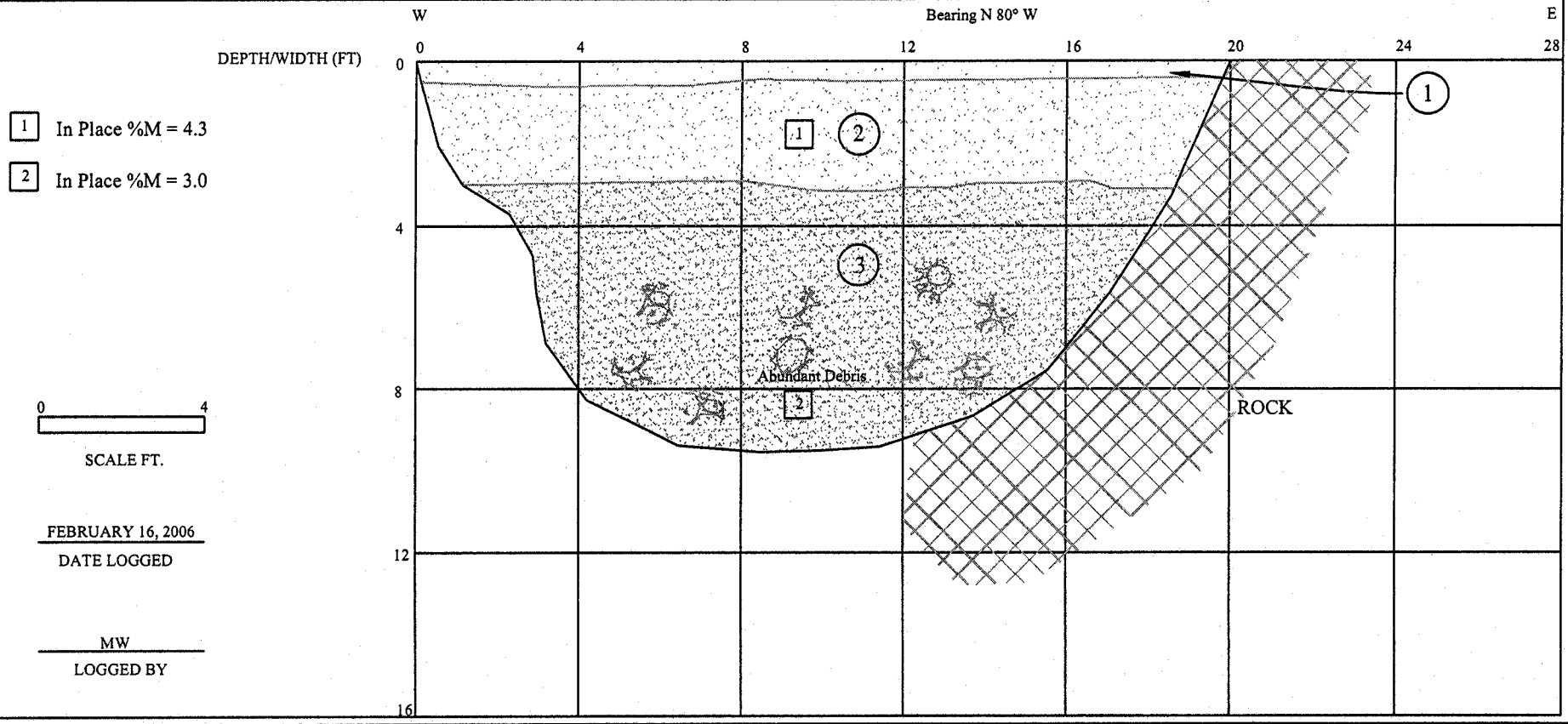
# TEST PIT LOG GTP-106

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-13 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-0.5 | (1) | FILL/ALLUVIUM - SAND (SP)<br>Tan to gray, coarse, dry, loose |
| 0.5-3.0 | (2) | FILL/ALLUVIUM - SAND (SM)<br>Tan to brown, silty, fine grained, dry, moderately loose |
| 3.0-9.5 | (3) | FILL/ALLUVIUM - SAND (SP)<br>Brown, coarse, abundant gravel, cobbles, large debris, asphalt, angle iron |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE

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| | | | | |
|---|---|---|---|---|
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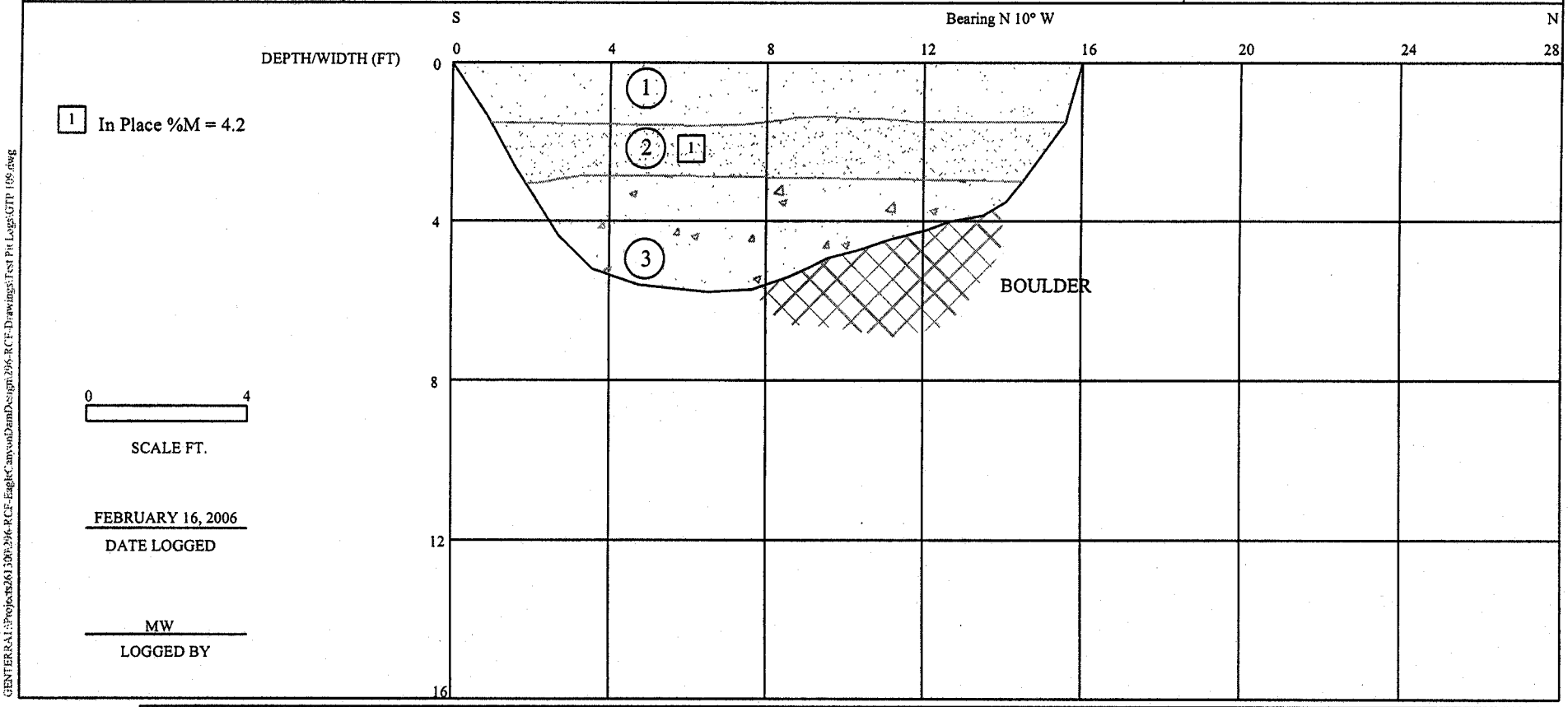
| | | | PROJECT | DATE | FIGURE |
| | | | 296-RCF | MAY 2006 | A-14 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-1.5 | (1) | SAND (SP)<br>Tan to gray, very coarse, dry, loose |
| 1.5-3.0 | (2) | SAND (SM)<br>Tan, silty, very fine grained, dry, loose |
| 3.0-6.0 | (3) | SILTY SAND (SP)<br>Abundant boulders in silty sand matrix |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE




1 In Place %M = 4.2

0 4

SCALE FT.

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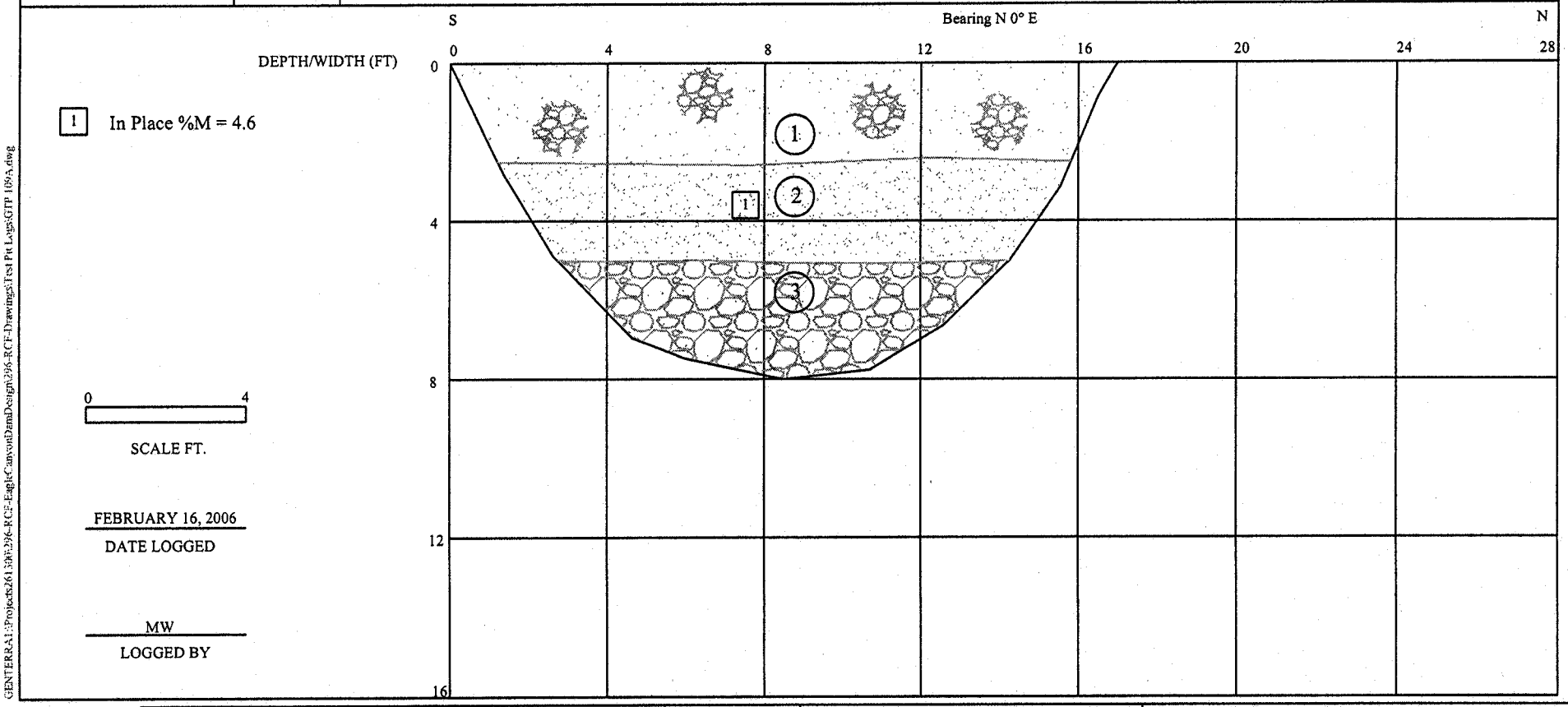
# TEST PIT LOG GTP-109

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-15 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-2.5 | (1) | SAND AND GRAVEL (SP/GP)<br>Tan to gray, very coarse, dry near ground surface, becomes moderately moist at 1.5', abundant gravel and cobbles 0-1.5', scattered gravel, few cobbles 1.5'-2.5' |
| 2.5-5.0 | (2) | SAND (SM) to SANDY SILT (ML)<br>Tan, silty, very fine to fine grained, scattered gravel and isolated small cobbles, moderately dry, moderately loose |
| 5.0-8.0 | (3) | SAND AND GRAVEL (SP/GP)<br>Abundant boulders, dry, loose, caving |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE






| | | | |
|---|---|---|---|
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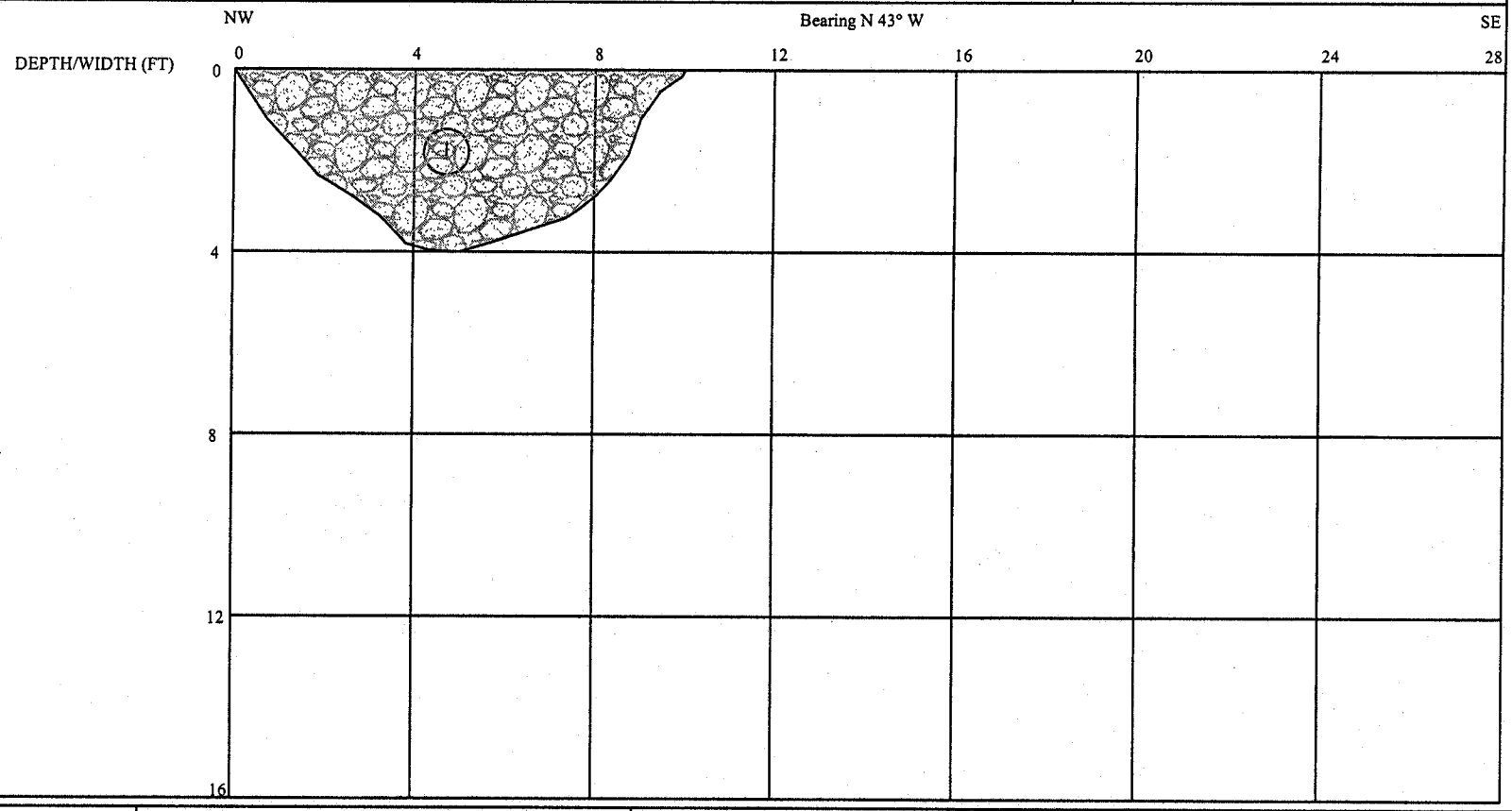
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-16 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-4.0 | (1) | SAND AND GRAVEL (SP/GP)<br>Coarse, abundant cobbles and boulders, dry, loose at surface, dense at bottom |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE




0 — 4

SCALE FT.

FEBRUARY 16, 2006

DATE LOGGED

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LOGGED BY

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| | | | |
|---|---|---|---|
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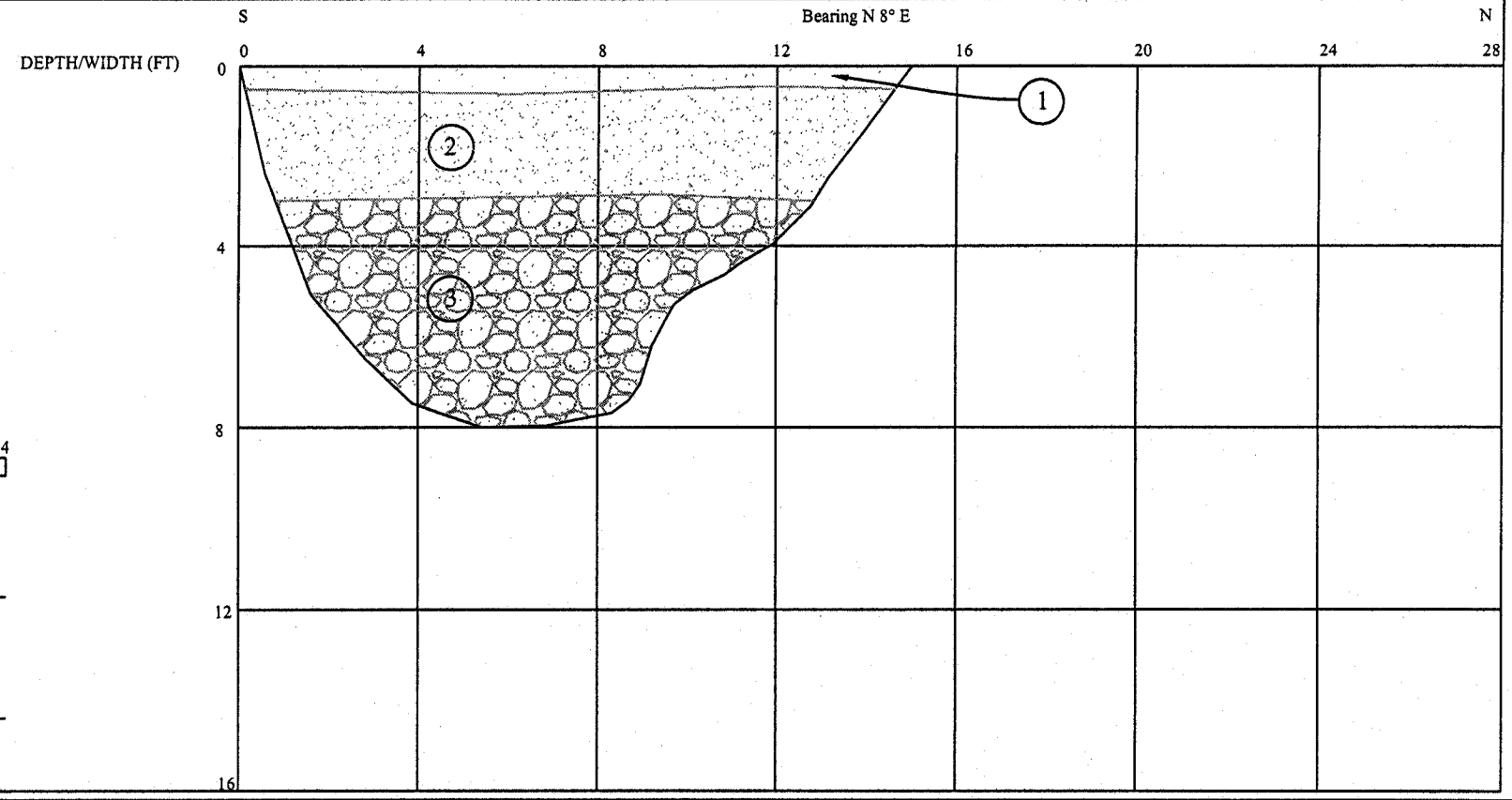
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-17 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-0.5 | (1) | SAND (SP)<br>Tan to gray, coarse, poorly graded, little to no fines |
| 0.5-3.0 | (2) | SAND (SM)<br>Silty, fine to very fine, thin (0.5"-2") lenses of coarse sand, medium moist, loose to moderately dense |
| 3.0-8.0 | (3) | SAND AND GRAVEL (SP)<br>Coarse, horizontally stratified, abundant gravel and cobbles |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE




0 — 4

SCALE FT.

FEBRUARY 16, 2006

DATE LOGGED

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# TEST PIT LOG GTP-110A

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-18 |

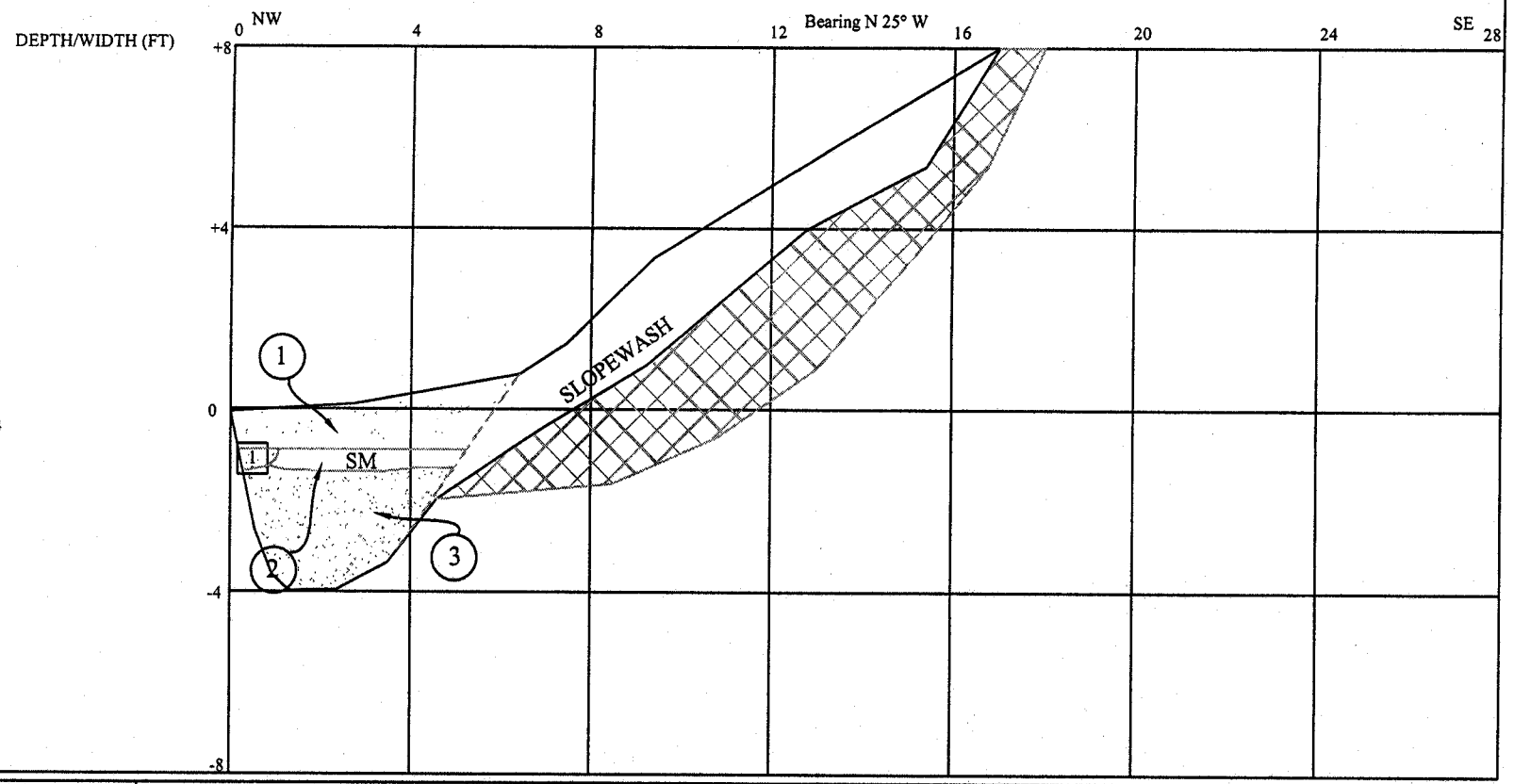
| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-2.0 | 1 | ALLUVIUM - SAND AND GRAVEL (SP)<br>Tan, coarse, dry, loose, contact with slopewash |
| 2.0-3.0 | 2 | SAND (SM)<br>Silty, very fine, remnant wedge deposit, dry, loose |
| 3.0-4.0 | 3 | SAND AND GRAVEL (SP)<br>Coarse channel deposit, dry, loose |
| | 4 | SLOPEWASH<br>Chaotic mixture of fine to coarse angular sand, gravel, cobbles, boulders; dry, loose |

**LEGEND**

○ LAYER NUMBER

□ BAG SAMPLE

1 In Place %M = 1.9

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SCALE FT.

FEBRUARY 16, 2006

DATE LOGGED

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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENTERRA CONSULTANTS, INC.
Engineering & Environmental Services
Irvine, California

PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION

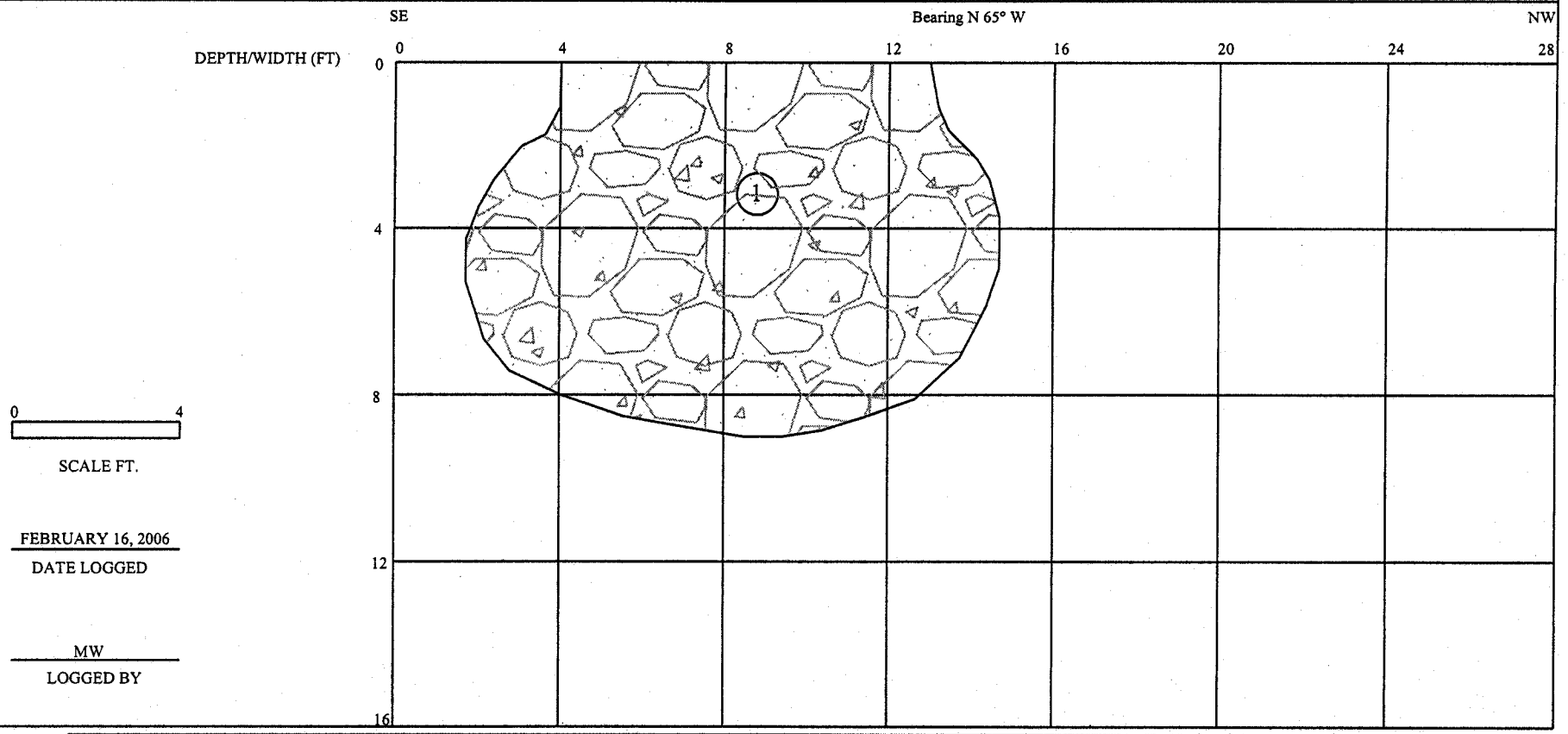
# TEST PIT LOG GTP-111

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-19 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-9.0 | (1) | FILL<br>Concrete, rubble, asphalt, rebar, PVC pipe, transite pipe, masonry rubble, rubber tires, metal fragments, matrix is coarse sand; dry, loose, active caving |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE

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| | | | |
|---|---|---|---|
| RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT | GENTERRA CONSULTANTS, INC. *Engineering & Environmental Services* *Irvine, California* | PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION | TEST PIT LOG GTP-112 |

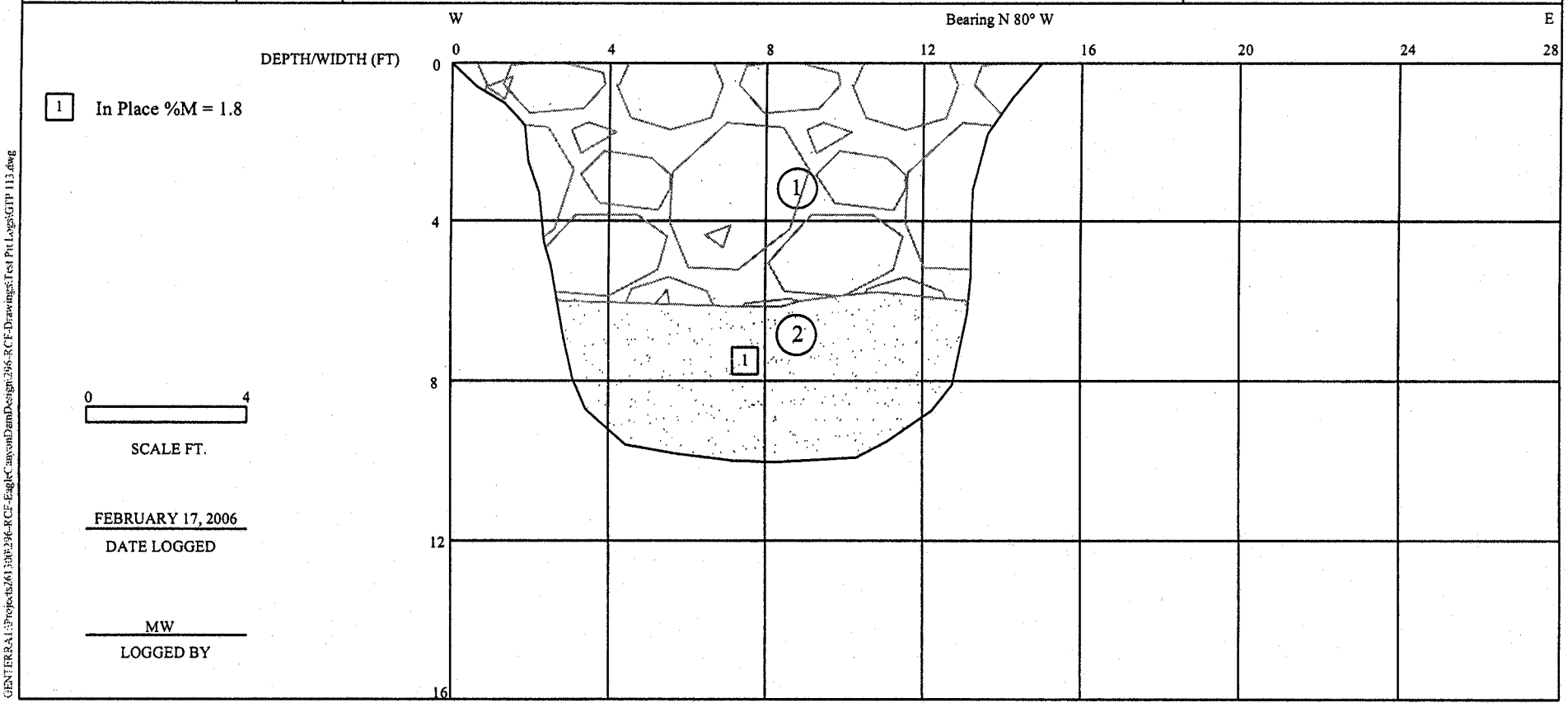
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-20 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-6.0 | (1) | FILL (GP)<br>Gravel, cobbles and boulders with minor scattered debris, no stratification |
| 6.0-10.0 | (2) | ALUVIUM (SP)<br>Coarse sand and gravel, horizontally stratified, moderately dry, dense |

## LEGEND

○ LAYER NUMBER

□ BAG SAMPLE

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DATE LOGGED

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LOGGED BY

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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENTERRA CONSULTANTS, INC.
Engineering & Environmental Services
Irvine, California

PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION

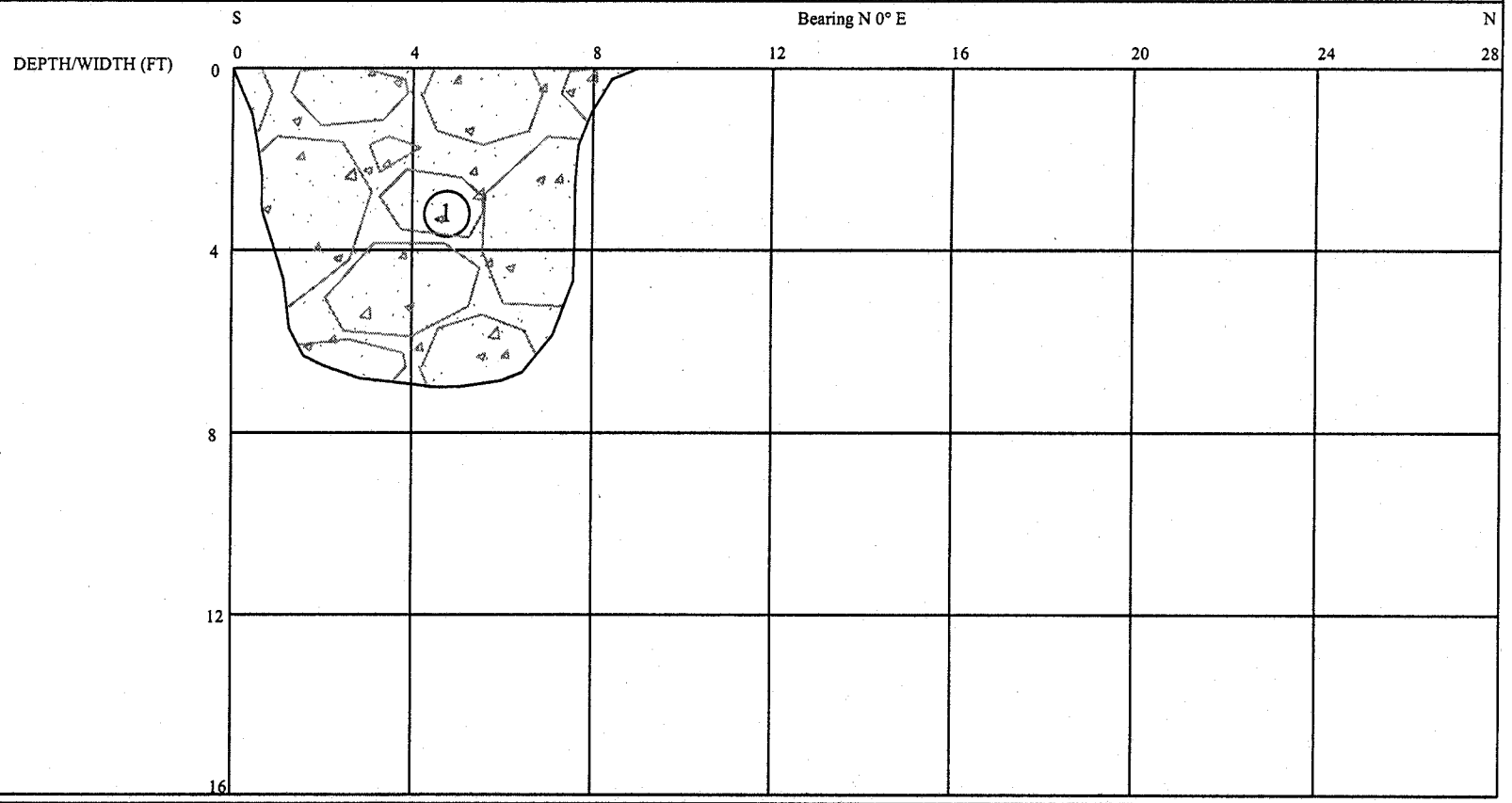
# TEST PIT LOG GTP-113

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-21 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-7.0 | (1) | SLOPEWASH (SP/GP)<br>Coarse, angular rock fragments in coarse sand matrix, dry, loose, <5% fines |

**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE

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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENTERRA CONSULTANTS, INC.
Engineering & Environmental Services
Irvine, California

PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION

# TEST PIT LOG GTP-114

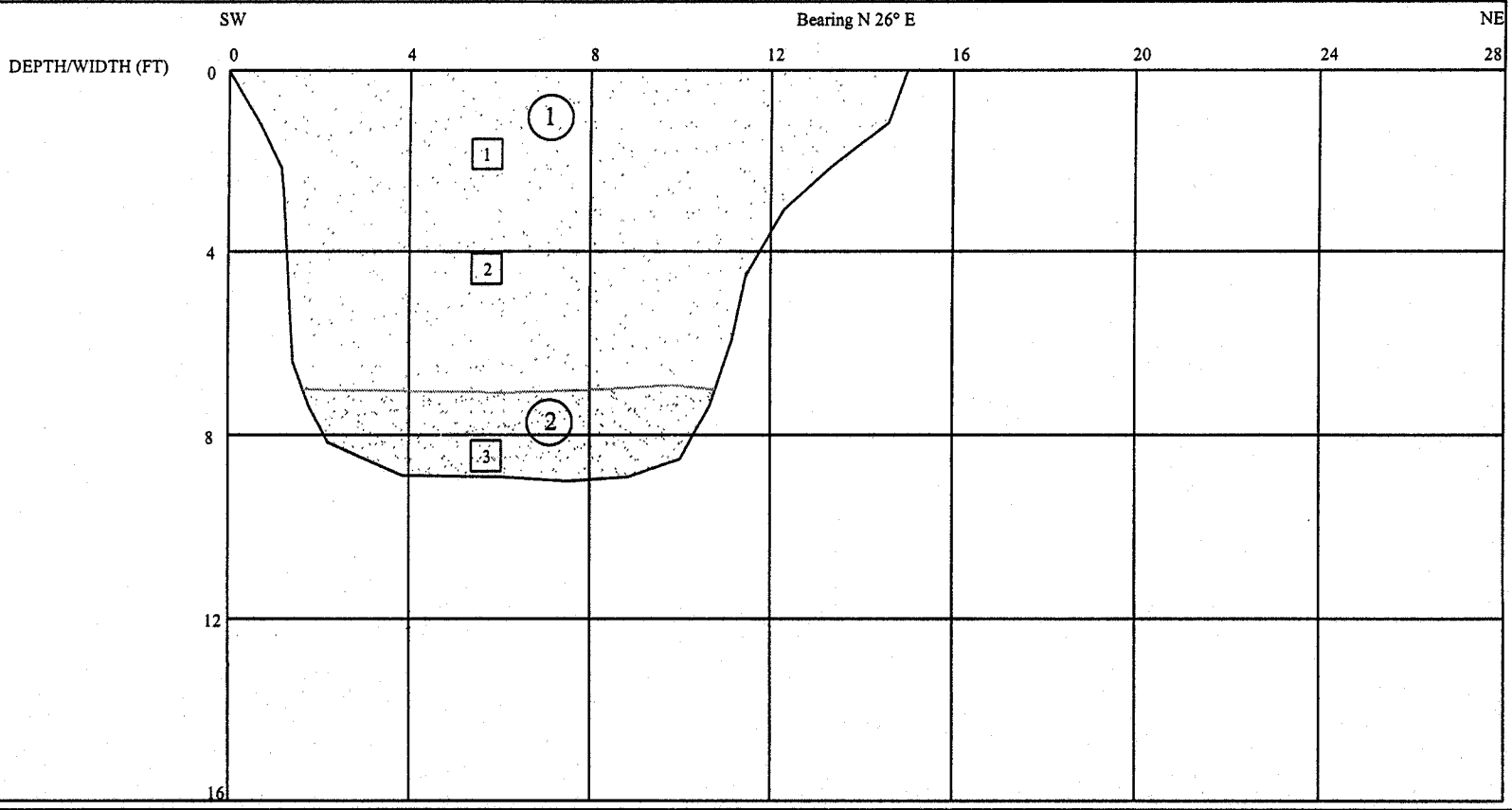
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-22 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-7.0 | (1) | ALLUVIUM (SP/SM)<br>Old stream terrace, coarse sand and gravel, horizontally stratified, dry, loose at surface, grades dense at 2', at 3' matrix grades slightly less coarse, less gravel size, silty |
| 7.0-9.0 | (2) | SAND (SW)<br>Grades fine to coarse, dry, moderately loose, <10% fines |

**LEGEND**

○ LAYER NUMBER

□ BAG SAMPLE




FEBRUARY 17, 2006
DATE LOGGED

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| | | | |
|---|---|---|---|
| RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT | GENTERRA CONSULTANTS, INC. *Engineering & Environmental Services* *Irvine, California* | PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION | TEST PIT LOG GTP-115 |

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-23 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-2.0 | (1) | FILL (SP)<br>Old stream terrace, coarse sand and gravel, horizontally stratified, dry, loose at surface, grades dense at 2', at 3' matrix grades slightly less coarse, less gravel size |
| 2.0-7.0 | (2) | SAND AND GRAVEL (SP/GP)<br>Old stream terrace, coarse sand and gravel, horizontally stratified, dry, loose at surface, grades dense at 2', at 3' matrix grades slightly less coarse, less gravel size |
| 7.0-8.0 | (3) | SAND AND GRAVEL (SP/GP)<br>Larger angular boulders, dry, caving |

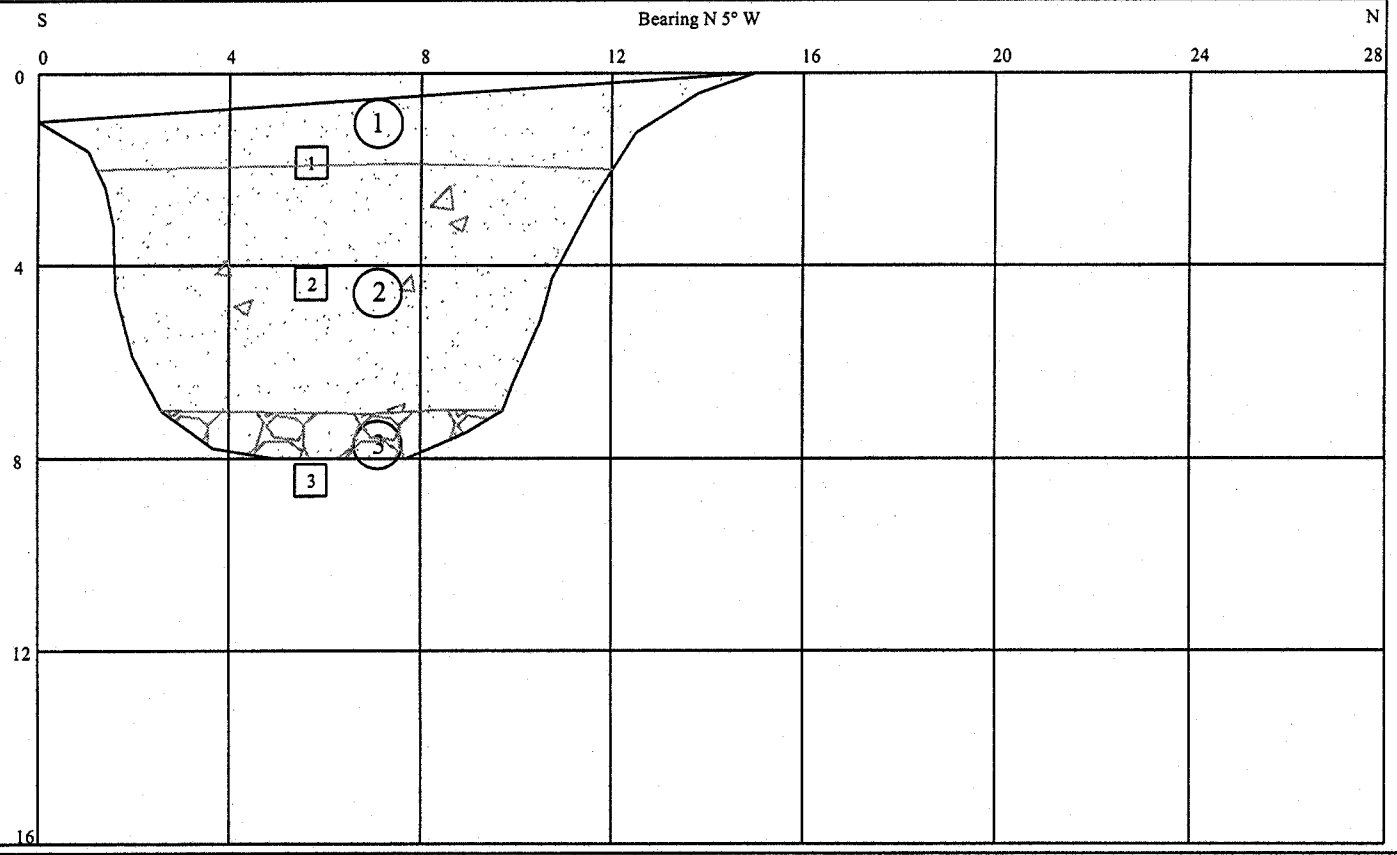
**LEGEND**

- ○ LAYER NUMBER
- □ BAG SAMPLE

[1] In Place %M = 1.3

[2] In Place %M = 1.5

[3] In Place %M = 1.6

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FEBRUARY 17, 2006

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| | | | |
|---|---|---|---|
| RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT | GENTERRA CONSULTANTS, INC. Engineering & Environmental Services Irvine, California | PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION | TEST PIT LOG GTP-116 |

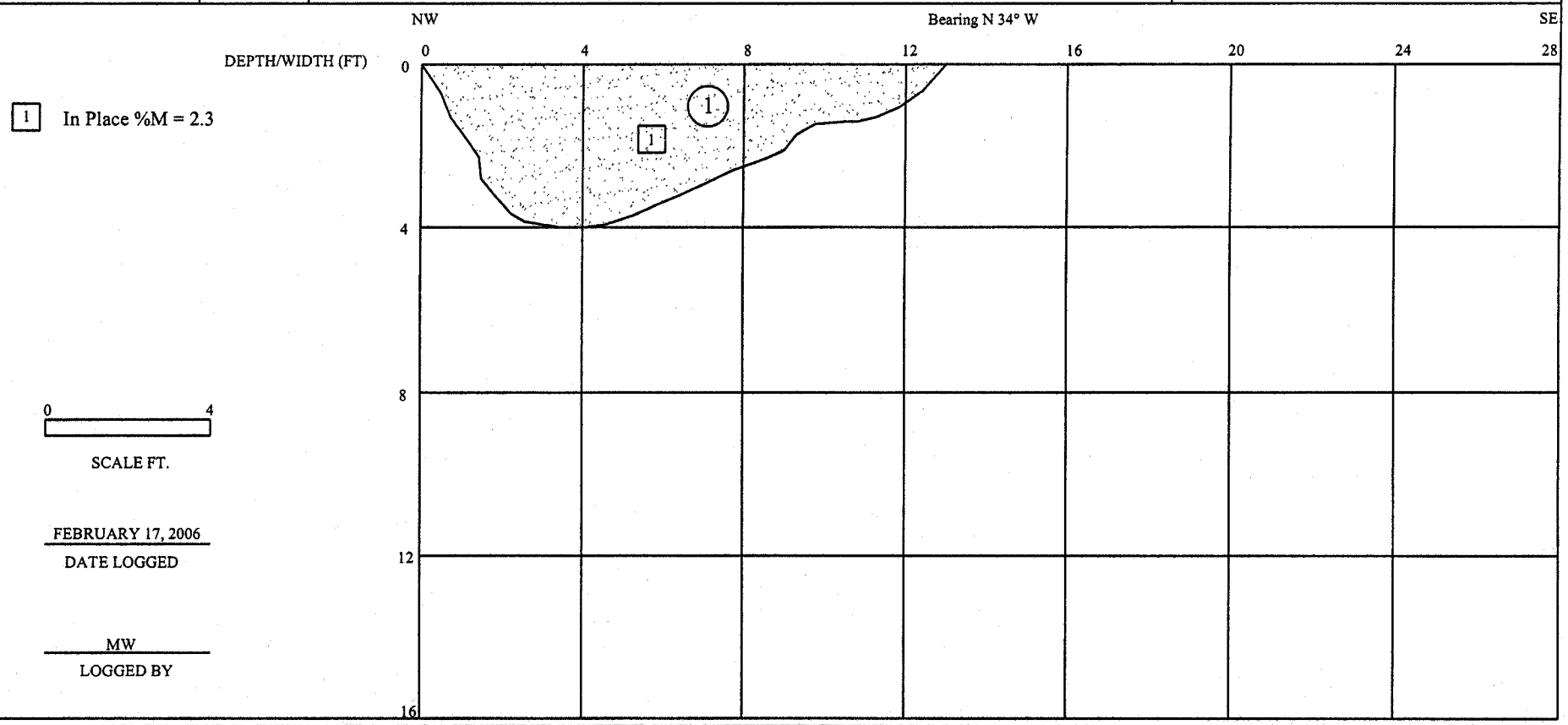
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | APRIL 2006 | A-24 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-4.0 | (1) | ALLUVIUM (SP)<br>Coarse sand and gravel, horizontally stratified, dry, loose at surface, grades moderately moist at 1' |

## LEGEND

○ LAYER NUMBER

□ BAG SAMPLE

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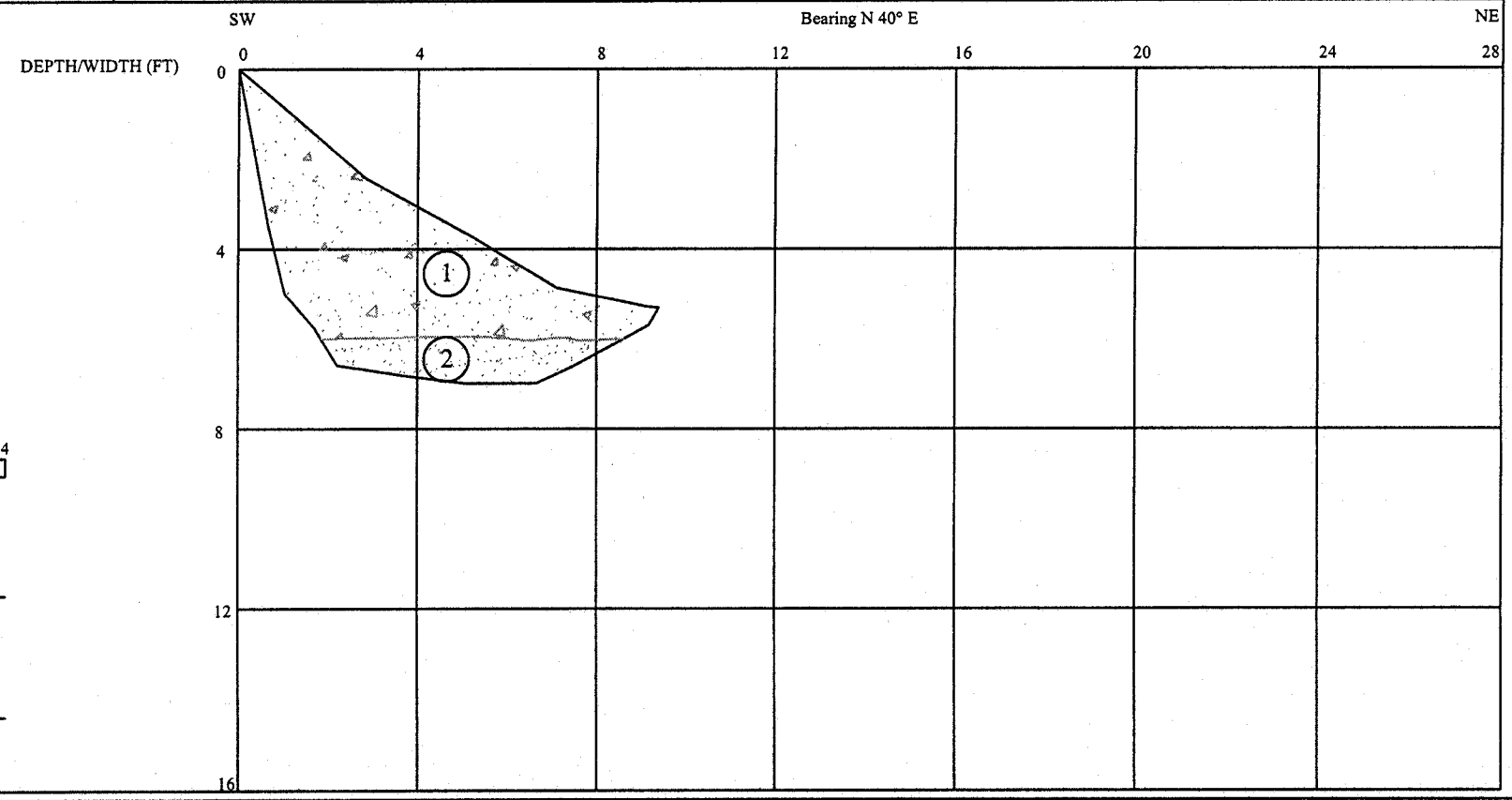
| RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT | GENTERRA CONSULTANTS, INC. Engineering & Environmental Services Irvine, California | PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION | TEST PIT LOG GTP-117 | | |
|---|---|---|---|---|---|
| | | | PROJECT | DATE | FIGURE |
| | | | 296-RCF | MAY 2006 | A-25 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-6.0 | (1) | SLOPEWASH (SP)<br>Fine to coarse sand with abundant cobbles, boulders, dry, loose |
| 6.0-7.0 | (2) | SAND AND GRAVEL (SP)<br>Very coarse grained, horizontally stratified, moderately moist, moderately dense |

**LEGEND**

○ LAYER NUMBER

□ BAG SAMPLE

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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENTERRA CONSULTANTS, INC.
*Engineering & Environmental Services*
*Irvine, California*

PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION

# TEST PIT LOG GTP-118

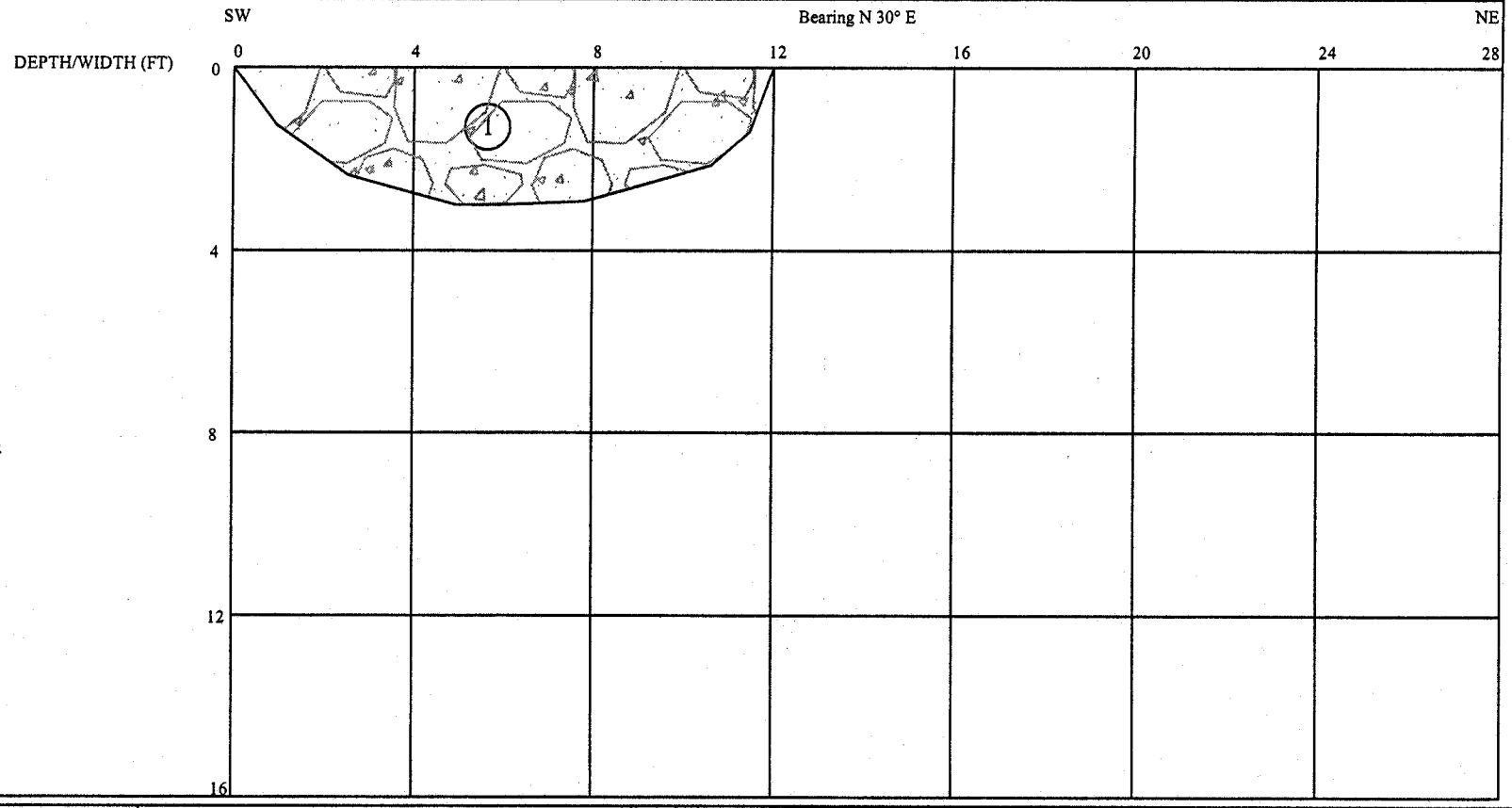
| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | MAY 2006 | A-26 |

| DEPTH (FT) | NO. | DESCRIPTION |
|---|---|---|
| 0-3.0 | (1) | ALLUVIUM<br>Boulders in coarse sand and gravel matrix, dry, loose at surface, grades moderately moist at 1', large angular boulders strewn around area at ground surface<br>Backhoe refusal @ 3 ft. |

## LEGEND

○ LAYER NUMBER

□ BAG SAMPLE

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FEBRUARY 17, 2006

DATE LOGGED

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| | | | |
|---|---|---|---|
| RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT | GENTERRA CONSULTANTS, INC. Engineering & Environmental Services Irvine, California | PROPOSED EAGLE CANYON DAM AND RESERVOIR FIELD INVESTIGATION | TEST PIT LOG GTP-119 |

| PROJECT | DATE | FIGURE |
|---|---|---|
| 296-RCF | APRIL 2006 | A-27 |

# APPENDIX "D"

# NPDES GENERAL PERMIT FOR CONSTRUCTION

Linda S. Adams
*Secretary for*
*Environmental Protection*

# State Water Resources Control Board

**Division of Water Quality**
1001 I Street • Sacramento, California 95814 • (916) 341-5537
Mailing Address: P.O. Box 1977 • Sacramento, California • 95812-1977
FAX (916) 341-5543 • Internet Address: http://www.waterboards.ca.gov/water_issues/programs/stormwater/

**Arnold Schwarzenegger**
*Governor*

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES ASSOCIATED WITH
CONSTRUCTION ACTIVITY (GENERAL PERMIT)
WATER QUALITY ORDER 99-08-DWQ

## TABLE OF CONTENTS

Click on the items below to view Section

Linda S Adams
*Secretary for*
*Environmental Protection*

# State Water Resources Control Board

**Division of Water Quality**
1001 I Street • Sacramento, California 95814 • (916) 341-5537
Mailing Address: P.O. Box 1977 • Sacramento, California • 95812-1977
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**Arnold Schwarzenegger**
*Governor*

## CHECKLIST FOR SUBMITTING A NOTICE OF INTENT

In order for the State Water Resources Control Board to expeditiously process your Notice of Intent (NOI), the following items must be submitted to either of the addresses indicated below:

1._____ NOI (please keep a copy for your files) with all applicable sections completed and original signature of the landowner or signatory agent;

2._____ Check made out to the "State Water Resources Control Board"
See reverse for listing of fees by acre. The fee is based on the "Total Acres to be Disturbed" for the life of the project.

3. _____ Site Map of the facility (see NOI instructions). DO NOT SEND BLUEPRINTS

U.S. Postal Service Address

State Water Resources Control Board
Division of Water Quality
Attn: Storm Water Section
P.O. Box 1977
Sacramento, CA 95812-1977

Overnight Mailing Address

State Water Resources Control Board
Division Of Water Quality
Attn: Storm Water, 15th Floor
1001 I Street
Sacramento, CA 95814

NOIs are processed in the order they are received. A NOI receipt letter will be mailed to the land owner within approximately two weeks. Incomplete NOI submittals will be returned to the landowner's address within the same timeframe and will specify the reason(s) for return. If you need a receipt letter by a specific date (for example, to provide to a local agency), we advise that you submit your NOI thirty (30) days prior to the date the receipt letter is needed.

Please do not call us to verify your NOI status. A copy of your NOI receipt letter will be available on our web page within twenty-four (24) hours of processing. Go to: http://www.waterboards.ca.gov/water_issues/programs/stormwater/databases.shtml to retrieve an electronic copy of your NOI receipt letter. If you have any questions regarding this matter, please contact us at (916) 341-5537.

# Construction Annual Fees by Acre

Partial Acreage rounded to nearest whole number

| Acres | Fee | 21% Surcharge | Total Fee |
|---|---|---|---|
| 0 | $238 | $50 | $288 |
| 1 | $262 | $55 | $317 |
| 2 | $286 | $60 | $346 |
| 3 | $310 | $65 | $375 |
| 4 | $334 | $70 | $404 |
| 5 | $358 | $75 | $433 |
| 6 | $382 | $80 | $462 |
| 7 | $406 | $85 | $491 |
| 8 | $430 | $90 | $520 |
| 9 | $454 | $95 | $549 |
| 10 | $478 | $100 | $578 |
| 11 | $502 | $105 | $607 |
| 12 | $526 | $110 | $636 |
| 13 | $550 | $116 | $666 |
| 14 | $574 | $121 | $695 |
| 15 | $598 | $126 | $724 |
| 16 | $622 | $131 | $753 |
| 17 | $646 | $136 | $782 |
| 18 | $670 | $141 | $811 |
| 19 | $694 | $146 | $840 |
| 20 | $718 | $151 | $869 |
| 21 | $742 | $156 | $898 |
| 22 | $766 | $161 | $927 |
| 23 | $790 | $166 | $956 |
| 24 | $814 | $171 | $985 |
| 25 | $838 | $176 | $1,014 |
| 26 | $862 | $181 | $1,043 |
| 27 | $886 | $186 | $1,072 |
| 28 | $910 | $191 | $1,101 |
| 29 | $934 | $196 | $1,130 |
| 30 | $958 | $201 | $1,159 |
| 31 | $982 | $206 | $1,188 |
| 32 | $1,006 | $211 | $1,217 |
| 33 | $1,030 | $216 | $1,246 |
| 34 | $1,054 | $221 | $1,275 |
| 35 | $1,078 | $226 | $1,304 |
| 36 | $1,102 | $231 | $1,333 |
| 37 | $1,126 | $236 | $1,362 |
| 38 | $1,150 | $242 | $1,392 |
| 39 | $1,174 | $247 | $1,421 |
| 40 | $1,198 | $252 | $1,450 |
| 41 | $1,222 | $257 | $1,479 |
| 42 | $1,246 | $262 | $1,508 |
| 43 | $1,270 | $267 | $1,537 |
| 44 | $1,294 | $272 | $1,566 |
| 45 | $1,318 | $277 | $1,595 |
| 46 | $1,342 | $282 | $1,624 |
| 47 | $1,366 | $287 | $1,653 |
| 48 | $1,390 | $292 | $1,682 |
| 49 | $1,414 | $297 | $1,711 |
| 50 | $1,438 | $302 | $1,740 |
| 51 | $1,462 | $307 | $1,769 |
| 52 | $1,486 | $312 | $1,798 |
| 53 | $1,510 | $317 | $1,827 |
| 54 | $1,534 | $322 | $1,856 |
| 55 | $1,558 | $327 | $1,885 |
| 56 | $1,582 | $332 | $1,914 |
| 57 | $1,606 | $337 | $1,943 |
| 58 | $1,630 | $342 | $1,972 |
| 59 | $1,654 | $347 | $2,001 |
| 60 | $1,678 | $352 | $2,030 |
| 61 | $1,702 | $357 | $2,059 |
| 62 | $1,726 | $362 | $2,088 |
| 63 | $1,750 | $368 | $2,118 |
| 64 | $1,774 | $373 | $2,147 |
| 65 | $1,798 | $378 | $2,176 |
| 66 | $1,822 | $383 | $2,205 |
| 67 | $1,846 | $388 | $2,234 |
| 68 | $1,870 | $393 | $2,263 |
| 69 | $1,894 | $398 | $2,292 |
| 70 | $1,918 | $403 | $2,321 |
| 71 | $1,942 | $408 | $2,350 |
| 72 | $1,966 | $413 | $2,379 |
| 73 | $1,990 | $418 | $2,408 |
| 74 | $2,014 | $423 | $2,437 |
| 75 | $2,038 | $428 | $2,466 |
| 76 | $2,062 | $433 | $2,495 |
| 77 | $2,086 | $438 | $2,524 |
| 78 | $2,110 | $443 | $2,553 |
| 79 | $2,134 | $448 | $2,582 |
| 80 | $2,158 | $453 | $2,611 |
| 81 | $2,182 | $458 | $2,640 |
| 82 | $2,206 | $463 | $2,669 |
| 83 | $2,230 | $468 | $2,698 |
| 84 | $2,254 | $473 | $2,727 |
| 85 | $2,278 | $478 | $2,756 |
| 86 | $2,302 | $483 | $2,785 |
| 87 | $2,326 | $488 | $2,814 |
| 88 | $2,350 | $494 | $2,844 |
| 89 | $2,374 | $499 | $2,873 |
| 90 | $2,398 | $504 | $2,902 |
| 91 | $2,422 | $509 | $2,931 |
| 92 | $2,446 | $514 | $2,960 |
| 93 | $2,470 | $519 | $2,989 |
| 94 | $2,494 | $524 | $3,018 |
| 95 | $2,518 | $529 | $3,047 |
| 96 | $2,542 | $534 | $3,076 |
| 97 | $2,566 | $539 | $3,105 |
| 98 | $2,590 | $544 | $3,134 |
| 99 | $2,614 | $549 | $3,163 |
| >100 | $2,618 | $550 | $3,192 |

FACT SHEET
FOR
WATER QUALITY ORDER 99-08-DWQ

STATE WATER RESOURCES CONTROL BOARD (SWRCB)
901 P STREET, SACRAMENTO, CALIFORNIA 95814

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES ASSOCIATED WITH
CONSTRUCTION ACTIVITY (GENERAL PERMIT)

## BACKGROUND

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p) which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 expand the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one (1) acre and less than five (5) acres (small construction activity). The regulations require that small construction activity, other than those regulated under an individual or Regional Water Quality Control Board General Permit, must be permitted no later than March 10, 2003.

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all storm water discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (Caltrans). Construction on Tribal Lands is regulated by an USEPA permit, the Lahontan Regional Water Control Board adopted a separate NPDES permit for the Lake Tahoe Hydrologic Unit, and the SWRCB adopted a separate NPDES permit for Caltrans projects. This General Permit requires all dischargers where construction activity disturbs one acre or more, to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce nonstorm water discharges to storm sewer systems and other waters of the nation.

3. Perform inspections of all BMPs.

This General Permit shall be implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs).

The General Permit accompanying this fact sheet regulates storm water runoff from construction sites. Regulating many storm water discharges under one permit will greatly reduce the otherwise overwhelming administrative burden associated with permitting individual storm water discharges. Dischargers shall submit a Notice of Intent (NOI) to obtain coverage under this General Permit. It is expected that as the storm water program develops, the RWQCBs may issue General Permits or individual permits containing more specific permit provisions. When this occurs, those dischargers will no longer be regulated by this General Permit.

On August 19, 1999, the State Water Resources Control Board (SWRCB) reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ referred to as "General Permit"). The San Francisco BayKeeper, Santa Monica BayKeeper, San Diego BayKeeper, and Orange Coast Keeper filed a petition for writ of mandate challenging the General Permit in the Superior Court, County of Sacramento. The Court issued a judgment and writ of mandate on September 15, 2000. The Court directed the SWRCB to modify the provisions of the General Permit to require permittees to implement specific sampling and analytical procedures to determine whether Best Management Practices (BMPs) implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt, and (2 ) preventing other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. The monitoring provisions in the General Permit have been modified pursuant to the court order.

## TYPES OF CONSTRUCTION ACTIVITY COVERED BY THIS GENERAL PERMIT

Construction activity subject to this General Permit includes clearing, grading, disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre of total land area. Construction activity that results in soil disturbances of less than one acre is subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses one or more acres of soil disturbance or if there is significant water quality impairment resulting from the activity. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. Dischargers should confirm with the local RWQCB whether or not a particular routine maintenance activity is subject to this General Permit.

A construction project which includes a dredge and/or fill discharge to any jurisdictional surface water (e.g., wetland, channel, pond, or marine water) will also need a CWA Section 404 permit

from the U.S. Army Corps of Engineers and a CWA Section 401 Water Quality Certification from the RWQCB/SWRCB. Storm water discharges from dredge spoil placement which occurs outside of Corps jurisdiction (upland sites) and are part of construction activity which disturbs one or more acres of land are covered by this general permit. Proponents of construction projects which disturb one or more acres of land within the jurisdictional boundaries of a CWA Section 404 permit should contact the local RWQCB to determine the applicability of this permit to the project.

NOTIFICATION REQUIREMENTS

It is the responsibility of the landowner to obtain coverage under this General Permit prior to commencement of construction activities. To obtain coverage, the landowner must file an NOI with a vicinity map and the appropriate fee with the SWRCB. In addition, coverage under this permit shall not occur until the applicant develops an adequate SWPPP for the project. Section A of the General Permit outlines the required contents of a SWPPP. For proposed construction activity on easements or on nearby property by agreement or permission, the entity responsible for the construction activity shall file an NOI and filing fee and shall be responsible for development of the SWPPP, all of which must occur prior to commencement of construction activities.

A separate NOI shall be submitted to the SWRCB for each construction site. Owners of new construction shall file an NOI prior to the commencement of construction. Owners of an ongoing construction site that is covered under the previous General Construction Permit (WQ Order No.92-08-DWQ) (1) shall continue to implement their existing SWPPP and monitoring program and (2) shall implement any necessary revisions to their SWPPP in a timely manner but in no case later than 90-calender days from adoption of this General Permit in accordance with Section A of this General Permit.

The NOI requirements of the General Permit are intended to establish a mechanism which can be used to clearly identify the responsible parties, locations, and scope of operations of dischargers covered by the General Permit and to document the discharger's knowledge of the requirements for a SWPPP.

The NOI must be sent to the following address:

State Water Resources Control Board
Division of Water Quality
Storm Water Permit Unit
P.O. Box 1977
Sacramento, CA 95812-1977

The Annual fees are established through regulations adopted by the SWRCB. The total annual fee is the current base fee plus applicable surcharges for all construction sites submitting an NOI .

When construction is complete or ownership has been transferred, dischargers shall file a Notice of Termination with the RWQCB certifying that all State and local requirements have been met in accordance with Special Provisions for Construction Activity, C.7, of the General Permit.

Dischargers who fail to obtain coverage under this General Permit for storm water discharges to surface waters will be in violation of the CWA and the California Water Code.

CONSTRUCTION ACTIVITY NOT COVERED BY THIS GENERAL PERMIT

This General Permit does not apply to storm water discharges from (1) those areas on Tribal Lands; (2) the Lake Tahoe Hydrologic Unit; (3) construction under one acre, unless part of a larger common plan of development or sale; (4) projects covered by an individual NPDES Permit for storm water discharges associated with construction activity; and (5) landfill construction that is subject to the general industrial permit.

Storm water discharges in the Lake Tahoe Hydrologic Unit are regulated by a separate permit(s) adopted by the California Regional Water Quality Control Board, Lahontan Region (LRWQCB). USEPA regulates storm water discharges on Tribal Lands. Permit applications for storm water discharges that will be conducted in the Lake Tahoe Hydrologic Unit must be submitted directly to the LRWQCB.

DESCRIPTION OF GENERAL PERMIT CONDITIONS

The following is a brief description of the major provisions of the General Permit and the basis for the General Permit.

Prohibitions

This General Permit authorizes the discharge of storm water to surface waters from construction activities that result in the disturbance of one or more acres of land. It prohibits the discharge of materials other than storm water and authorized non-storm water discharges and all discharges which contain a hazardous substance in excess of reportable quantities established at 40 Code of Federal Regulations (CFR) 117.3 or 40 CFR 302.4 unless a separate NPDES Permit has been issued to regulate those discharges. In addition, this General Permit contains provisions that uphold discharge prohibitions contained in water quality control plans, as implemented through the nine RWQCBs.

Effluent Limitations

Permits for storm water discharges associated with construction activity shall meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require controls of pollutant discharges that utilize best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants and any more stringent controls necessary to meet water quality standards.

It is not feasible at this time for the SWRCB to establish numeric effluent limitations. The reasons why it is not feasible to establish numeric effluent limitations are discussed in detail in SWRCB Order Nos. WQ 91-03 and WQ 91-04. Therefore, the effluent limitations contained in this General Permit are narrative and include the requirement to implement appropriate BMPs.

The BMPs shall primarily emphasize source controls such as erosion control and pollution prevention methods. The discharger shall also install structural controls, as necessary, such as sediment control which will constitute BAT and BCT and will achieve compliance with water quality standards. The narrative effluent limitations constitute compliance with the requirements of the CWA.

Elimination or reduction of nonstorm water discharges is a major goal of this General Permit. Nonstorm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Nonstorm water discharges may contribute a significant pollutant load to receiving waters. Measures to control spills, leakage, and dumping and to prevent illicit connections during construction shall be addressed through structural as well as non-structural BMPs.

This General Permit prohibits the discharge of materials other than storm water and authorized nonstorm water discharges. It is recognized that certain nonstorm water discharges may be necessary for the completion of construction projects. Such discharges include, but are not limited to irrigation of vegetative erosion control measures, pipe flushing and testing, street cleaning, and dewatering. Such discharges are allowed by this General Permit provided they are not relied upon to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. These authorized nonstorm water discharges shall (1) be infeasible to eliminate, (2) comply with BMPs as described in the SWPPP, and (3) not cause or contribute to a violation of water quality standards. Additionally, these discharges may be required to be permitted by the local RWQCB (e.g., some RWQCBs have adopted General Permits for dewatering discharges). This General Permit is performance-based to the extent that it prohibits the discharge of storm water that causes or threatens to cause pollution, contamination, or nuisance; but it also allows the owner/developer to determine the most economical, effective, and possibly innovative BMPs.

The requirements of this General Permit are intended to be implemented on a year-round basis, not just during the part of the year when there is a high probability of a precipitation event which results in storm water runoff. The permit should be implemented at the appropriate level and in a proactive manner during all seasons while construction is ongoing.

Weather and storm predictions or weather information concerning the 10-year, 6-hour storm event and mean annual rainfall can be obtained by calling the Western Regional Climate Center at 775-674-7010 or via the internet at www.wrcc.dri.edu/precip.html and/or www.wrcc.dri.edu/pcpnfreq.html.

Receiving Water Limitations Language

The receiving water limitations language is fundamentally different from the language adopted in the SWRCB General Industrial Activities Storm Water Permit on April 17, 1997. Construction related activities which cause or contribute to an exceedance of water quality standards must be corrected immediately and cannot wait for the RWQCB to approve a plan of action to correct. The dynamic nature of construction activity allows the discharger the ability to more quickly identify and correct the source of the exceedances. Therefore, the owner is

required to take immediate corrective action and to provide a report to the appropriate RWQCB within
14-calendar days of the violation describing the corrective action.

Storm Water Pollution Prevention Plan (SWPPP)

This General Permit requires development and implementation of a SWPPP. This document emphasizes the use of appropriately selected, correctly installed and maintained pollution reduction BMPs. This approach provides the flexibility necessary to establish BMPs which can effectively address source control of pollutants during changing construction activities.

All dischargers shall prepare and implement a SWPPP prior to disturbing a site. The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. Nonstorm water BMPs must be implemented year round. The SWPPP shall remain on the site while the site is under construction, commencing with the initial mobilization and ending with the termination of coverage under the permit.

The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as nonstorm water discharges. The SWPPP shall include BMPs which address source control and, if necessary, shall also include BMPs which address pollutant control.

Required elements of a SWPPP include: (1) site description addressing the elements and characteristics specific to the site, (2) descriptions of BMPs for erosion and sediment controls, (3) BMPs for construction waste handling and disposal, (4) implementation of approved local plans, (5) proposed post-construction controls, including description of local post-construction erosion and sediment control requirements, and (6) nonstorm water management.

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, individuals responsible for creating, revising, overseeing, and implementing the SWPPP should participate in applicable training programs and document such training in the SWPPP.

SWPPPs are reports that are available to the public under Section 308(b) of the CWA and will be made available by the RWQCB upon request.

Monitoring Program

Another major feature of the General Permit is the development and implementation of a monitoring program. All dischargers are required to conduct inspections of the construction site prior to anticipated storm events and after actual storm events. During extended storm events, inspections must be made during each 24-hour period. The goals of these inspections are (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly installed and functioning in accordance with the terms of the General Permit; and (3) whether additional control practices or corrective maintenance activities are needed. Equipment, materials, and

workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible, depending upon worker safety.

Each discharger shall certify annually that the construction activities are in compliance with the requirements of this General Permit. Dischargers who cannot certify annual compliance shall notify the appropriate RWQCB. A well-developed monitoring program will provide a good method for checking the effectiveness of the SWPPP.

Retention of Records

The discharger is required to retain records of all monitoring information, copies of all reports required by this General Permit, and records of all data used to complete the NOI for all construction activities to be covered by the General Permit for a period of at least three years from the date generated. This period may be extended by request of the SWRCB and/or RWQCB. With the exception of reporting noncompliance to the appropriate RWQCB, dischargers are not required to submit the records, except upon specific request by the RWQCB.

FACT SHEET
FOR
WATER QUALITY ORDER 99-08-DWQ

STATE WATER RESOURCES CONTROL BOARD (SWRCB)
1001 I STREET, SACRAMENTO, CALIFORNIA 95814

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES ASSOCIATED WITH
CONSTRUCTION ACTIVITY (GENERAL PERMIT): Sampling and Analysis

**Contents**

# 1.0 Introduction

This document is an amendment to the Fact Sheet to the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction Activity (CGP). This Permit was modified in 2001 by Resolution No. 2001-046, "*Modification of Water Quality Order 99-08-DWQ State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit For Storm Water Discharges Associated With Construction Activity (CGP)*". The modifications to the CGP require that a sampling and analysis strategy and sampling schedule for certain discharges from construction activity be developed and kept with the project's Storm Water Pollution Prevention Plan (SWPPP). The sampling and analysis requirements are found in Section B, paragraphs 7 and 8, of the CGP. Paragraph 7 concerns monitoring for sedimentation/siltation or turbidity and Paragraph 8 concerns monitoring for pollutants that are not visually detectable in storm water. Where required, a sampling and analysis strategy and sampling schedule must be developed regardless of the time of the year that construction occurs.

This document only addresses the modifications and is intended to facilitate the proper implementation of the sampling and analysis requirements. It provides information on when sampling and analysis is required, how to perform sampling and analysis, what conclusions may be drawn from the sampling and analysis results, and it explains the rationale for the required sampling.

SWRCB staff developed this document with consideration of comments from interested persons, including the California Stormwater Quality Association, the Building Industry Legal Defense Foundation, the California Building Industry Association, the San Francisco BayKeeper, the Santa Monica BayKeeper, the San Diego BayKeeper, and the Orange County CoastKeeper. It is based on the CGP, two orders issued by the Sacramento Superior Court in response to a challenge to the CGP, Clean Water Act provisions, regulations, guidance documents and permits issued by the federal Environmental Protection Agency, and other documents submitted by interested persons. A full record has been compiled and is available for inspection or copying upon request. A draft guidance document was circulated for public comment and a hearing was held prior to issuance of this final guidance document.

Although sampling and analysis will be required at many construction sites, it will not be required at all construction sites. It is the responsibility of dischargers to evaluate the construction project and, where required, to develop a site-specific sampling and analysis strategy in compliance with the CGP requirements. For further guidance please contact your local Regional Water Quality Control Board (RWQCB).

The sampling and analysis requirements supplement, but do not replace, the visual monitoring program required by Section B of the CGP. All construction projects must continue the visual monitoring program including inspections before predicted rain events, during extended rain events, and following rain events that produce runoff.

This document provides guidance on complying with the sampling and analysis requirements of the CGP. It does not in any way change these requirements or guarantee compliance with the CGP. The permit has many other requirements such as development of a SWPPP,

implementation of Best Management Practices (BMP) programs, and visual monitoring that are not addressed in this document.

## 1.1 Organization

Section 1: general information and background on the sampling and requirements.

Section 2: non-visible pollutant sampling and analysis.

Section 3: sediment, silt and turbidity sampling and analysis.

Section 4: sampling and analysis procedures.

Section 5: definitions.

Section 6: contact list and additional sources of information.

Section 7: general explanation of and rationale for the sampling and analysis requirements; citations to other documents that form the basis for the SWRCB's conclusions.

## 1.2 Background

The SWRCB adopted the CGP on August 19, 1999. The CGP is an NPDES permit that implements section 402(p)(2)(B) of the federal Clean Water Act. The San Francisco BayKeeper, Santa Monica BayKeeper, San Diego BayKeeper, and Orange County CoastKeeper filed a petition for writ of mandate challenging numerous aspects of the CGP in the Superior Court, County of Sacramento.

On September 15, 2000, the Court issued a judgment and writ of mandate that upheld most provisions of the CGP, but directed the SWRCB to modify the provisions of the CGP to require permittees to implement specific sampling and analytical procedures to determine whether BMPs implemented on a construction site are:

(1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired (Clean Water Act Section 303(d) List [303(d) List]) for sediment, silt, or turbidity; and

(2) preventing other pollutants that are known or should be known by permittees to occur on construction sites and that can not be visually observed or detected in storm water discharges, from causing or contributing to exceedances of water quality objectives.

The monitoring, sampling and analysis provisions in the CGP were modified pursuant to the court order and issued as Resolution No. 2001-046, adopted by the SWRCB on April 26, 2001.

On December 27, 2001, the Court issued an Order Enforcing Writ of Mandate. In that order, the Court acknowledged that the permit had been modified, but required further actions by the SWRCB. Issuance of this fact sheet amendment is intended to respond to the Court's further instructions. In general, the Court expressed concern that certain aspects of the modifications might be ambiguous and might result in misinterpretation by dischargers. This amendment is

intended to avoid such potential ambiguities and misinterpretations and to help explain the requirements and provide suggestions for compliance.

### 1.2.1 Water Quality Standards or Objectives

The Receiving Water Limitations in the CGP require the SWPPP be designed and implemented so that storm water discharges and authorized non-storm water discharges do not cause or contribute to an exceedance of any applicable water quality standard. (CGP, Receiving Water Limitation B.2.) The modifications to the monitoring program require sampling and analysis procedures to help determine whether BMPs installed and maintained in accordance with the SWPPP are preventing pollutants in discharges from the construction site from causing or contributing to exceedance of water quality standards. In making these determinations, it is necessary to understand what are the applicable water quality standards.

Water quality standards consist of the designation of beneficial uses of surface waters and the adoption of ambient criteria necessary to protect those uses. (40 CFR §131.3(i)) When adopted by the SWRCB or a RWQCB, the criteria are termed "water quality objectives." (Water Code §13241; the terms are used interchangeably here.) If storm water runoff from construction sites contains pollutants, there is a risk that those pollutants could enter surface waters and cause or contribute to exceedance of water quality standards. For that reason, dischargers should be aware of the applicable water quality standards in their receiving waters. (The best method to ensure compliance with receiving water limitations is to implement BMPs that prevent pollutants from contact with storm water or from leaving the construction site in runoff).

In California, water quality standards are published in the Basin Plans adopted by each RWQCB, the California Toxics Rule (CTR), the National Toxics Rule (NTR), and the Ocean Plan. One way to determine the applicable standards for the receiving water for your runoff is to contact staff from the appropriate RWQCB. (See the contact list in Section 6 of this guidance.)

The SWRCB intends in the future to augment its internet site to further facilitate access to water quality standards. In the interim, dischargers can determine the applicable water quality standards by contacting RWQCB staff or from one of the following sources. The actual plans that contain the water quality standards can be viewed at the site of the appropriate RWQCB for Basin Plans (http://www.waterboards.ca.gov/regions.html), the SWRCB site for statewide plans (http://www.waterboards.ca.gov/plnspols/index.html), or the US Environmental Protection Agency (USEPA) regulations for the NTR and CTR (40 CFR Title 131). Basin Plans and statewide plans are also available by mail from the appropriate RWQCB or the SWRCB. The USEPA regulations are available at http://www.epa.gov/. Additional information concerning Water Quality Standards can be accessed through http://www.waterboards.ca.gov/stormwtr/gen_const.html

### 1.2.2 Non-Visible Pollutant Sampling

The monitoring requirements in the CGP require sampling and analysis for pollutants that are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives. As is explained below, the situations where non-visible pollutants may occur in runoff from a construction site are limited. Where such non-visible pollutants are known or

should be known to be present and have the potential to contact runoff and to contribute to an exceedence of a water quality objective, sampling and analysis is required.

A variety of materials are used in construction or are present on construction sites. Examples of such materials include soil stabilizers, paint, and fluids from vehicles. Any of these materials can end up in the storm water runoff and contain pollutants that pose a threat to water quality. Some of these potential pollutants will leave a visible trace. For example, sediment turns water brown and oil and grease leave a sheen. Other pollutants will discolor the runoff or leave a residue or film. For pollutants that are visible in runoff, the CGP requires the discharger to perform visual monitoring of the site and does not require sampling and analysis. The sampling and analysis requirements only apply to pollutants that do not leave a visible trace or are not associated with a visible tracer. Examples of such potential non-visible pollutants include increased pH, pesticides, and nutrients such as nitrogen or phosphorus.

The presence or use of a material on the construction site does not always mean that dischargers must sample for it in runoff. The CGP requires sampling and analysis when non-visible pollutants could "cause or contribute to an exceedance of water quality objectives in the receiving water." The most effective way to avoid the sampling and analysis requirements, and to ensure permit compliance, is to avoid the exposure of construction materials to precipitation and storm water runoff. Materials that are not exposed do not have the potential to enter storm water runoff, and therefore do not need to be sampled for in runoff. Preventing contact between storm water and construction materials is one of the most important BMPs at any construction site. Manage any potential pollutants on the site in such a way that the exposure of the pollutant to rainfall or storm water is minimized or eliminated.

Elimination of exposure of pollutants at construction sites is not always possible. Some materials, such as soil amendments, are designed to be used in a manner that will result in exposure to storm water. In these cases, it is important to make sure that these materials are applied according to the manufacturer's instructions at a time when they are unlikely to be washed away. Other materials can be exposed when storage, waste disposal or application are not done in a manner protective of water quality or through accidental spillage. For these situations, sampling is required unless there is capture and containment of all storm water that has been exposed to pollutants. In cases where construction materials may be exposed to storm water but the storm water is contained, and is not allowed to run off the site, then sampling only needs to occur when inspections show the containment failed or is breached and there is potential for exposure or discharge.

Many common good housekeeping BMPs already limit exposure to most materials. Improving these practices to prevent exposure is a better approach to preventing pollution of runoff and will limit the amount of sampling and analysis. Improved BMPs may be less costly than an ongoing sampling and analysis program.

The first step in managing potential pollutants at a construction site is the implementation of well thought out BMP programs that are designed to minimize the mobilization of pollutants such as sediment and to minimize the exposure of storm water to pollutants. The next important step is an aggressive program of inspections both on a regular basis and before and after storms. The inspection program must also be accompanied by an equally aggressive BMP maintenance

program. The receiving water is protected when appropriate BMPs are implemented, inspected and maintained. The role of sampling is to support the visual inspection of the site when necessary.

### 1.2.3 Sediment-Impaired Water Bodies

Certain lakes, streams, rivers, creeks and other bodies of water in California have been determined by the SWRCB to be impaired by one or more pollutants. (This listing is required by Clean Water Act section 303(d).) One of the pollutants that can trigger a listing is sediment, termed variously as sedimentation, siltation, sediment, or turbidity. The water bodies listed for sediment in California are included in Attachment 3 to the CGP. Additional discharges of sediment to a sediment-impaired water body-could contribute to the exceedance of a water quality standard for that pollutant. Following listing of impaired waters, RWQCBs adopt total maximum daily loads (TMDLs) that may include waste load allocations for the impairing pollutant. Effluent limitations in NPDES permits must be consistent with the assumptions and requirements of waste load allocations (40 CFR section 122.44(d)(1)(vii)(B)), and adoption of TMDLs could result in specific requirements in the CGP or an individual or watershed-wide construction permit. Pending completion of TMDLs for sediment-impaired waters, it is necessary to ensure that sediment discharges from construction sites do not cause or contribute to exceedances of water quality. To that end, the modifications require sampling and analysis of discharges from construction activity that directly enters a water body listed in Attachment 3 to the CGP as impaired for sediment. This requirement is generally only applicable to a handful of construction projects each year.

To obtain the latest list of 303(d) water bodies, visit the SWRCB's Web site at http://www.waterboards.ca.gov/.

## 1.3 Purpose of Sampling and Analysis

The primary method of determining compliance with the CGP is visual inspections. The permit requires regular inspections as well as pre-storm and post-storm inspections to determine if there are areas where storm water can be or has been exposed to pollutants. It is possible to see if there is erosion and movement of soil, or if construction materials, chemicals and waste are exposed. This is the best way to determine if the site is in compliance. In some cases, verification of this compliance through sampling and analysis is appropriate. The purpose of the sampling and analysis requirements is to support the visual observation program and to provide information that can be used to help determine whether the BMPs employed on a construction site are effective in preventing construction site pollutants from causing or contributing to exceedances of water quality objectives in the receiving waters. The modifications to the CGP contain two categories of sampling and analysis requirements, which are illustrated in Figures 1-1 and 1.2.1-4:

Monitoring for non-visible pollutants at any site where the relevant triggering conditions occur. This monitoring is required at any site where there is exposure and where a discharge can cause or contribute to exceedence of a water quality objective, not just those that discharge to water bodies that are listed for a particular pollutant; and

Monitoring for sediment in storm water discharged directly to water bodies listed as impaired for sediment/siltation, sediment, or turbidity on the SWRCB's 303(d) list of water bodies.

The sampling and analysis results are not conclusive proof of compliance or non compliance with the permit. Specifically, Receiving Water Limitations in the CGP provide that the SWPPP must be designed and implemented so that storm water discharges shall not cause or contribute to exceedance of any applicable water quality standards. These provisions also require implementation of corrective measures, and revision of the SWPPP and monitoring requirements if storm water discharges do cause or contribute to an exceedance of an applicable water quality standard. USEPA has pointed out the difficulties and limitations of using sampling in storm water permits as a measure of compliance. (57 Fed. Reg. 11394, 11402) While sampling and analysis, as required by the CGP, may be a useful tool in pointing to areas of concern, it is of limited use in the storm water context and must be used as a diagnostic tool rather than as conclusive evidence of compliance or non-compliance with the CGP.

## Determine if You Must Perform Sampling and Analysis for Sediment, Silt, or Turbidity

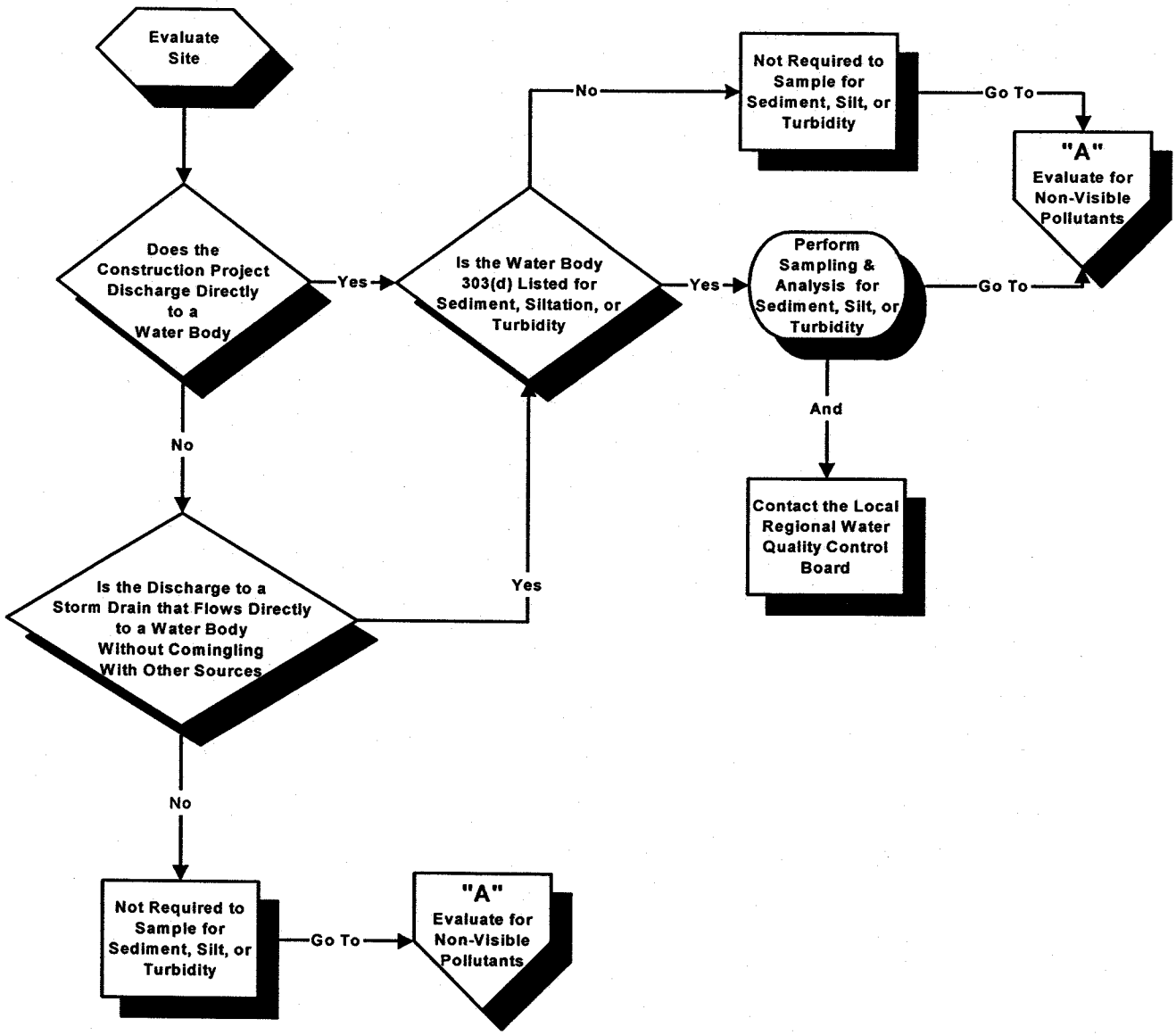



Figure 1.1

## Evaluate Site for Non-Visible Pollutants and Determine if You Must Perform Sampling & Analysis for Non-Visible Pollutants

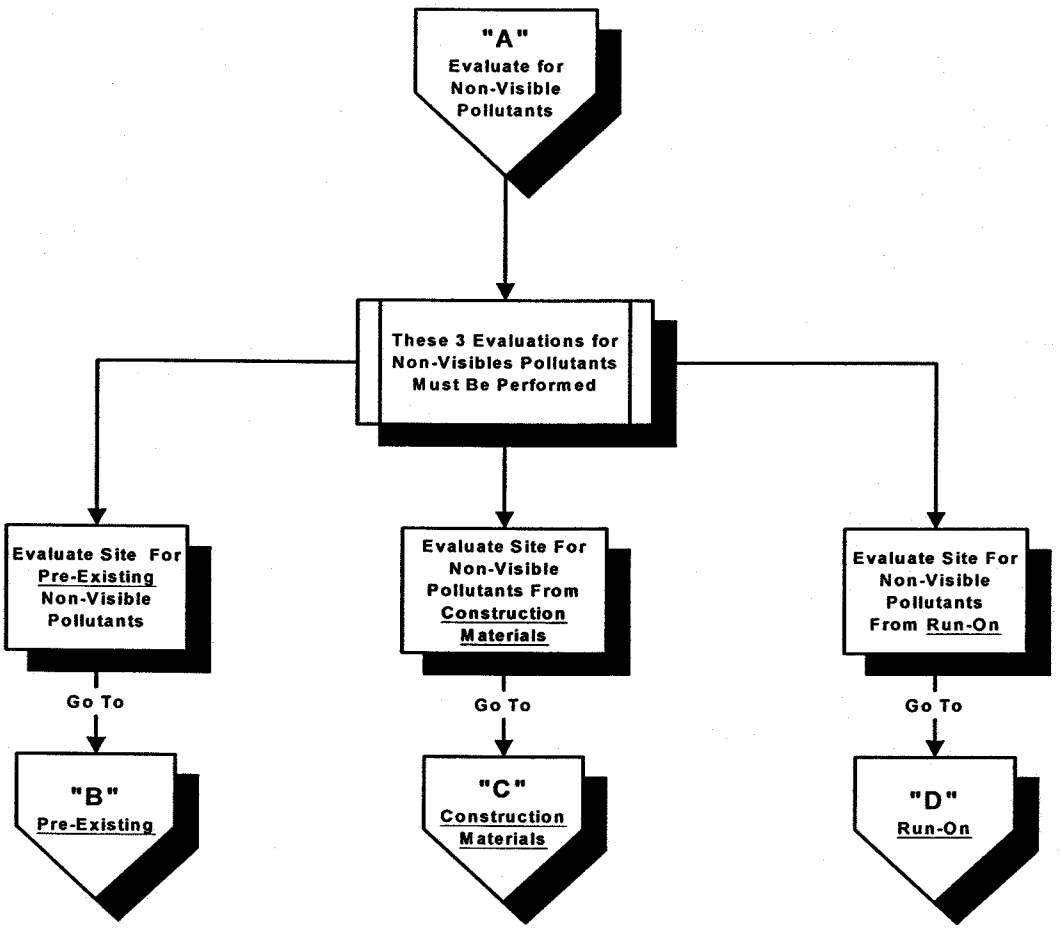



Figure 1.2

## Determine If You Must Perform Sampling and Analysis (S&A) for Pre-Existing Non-Visible Pollutants

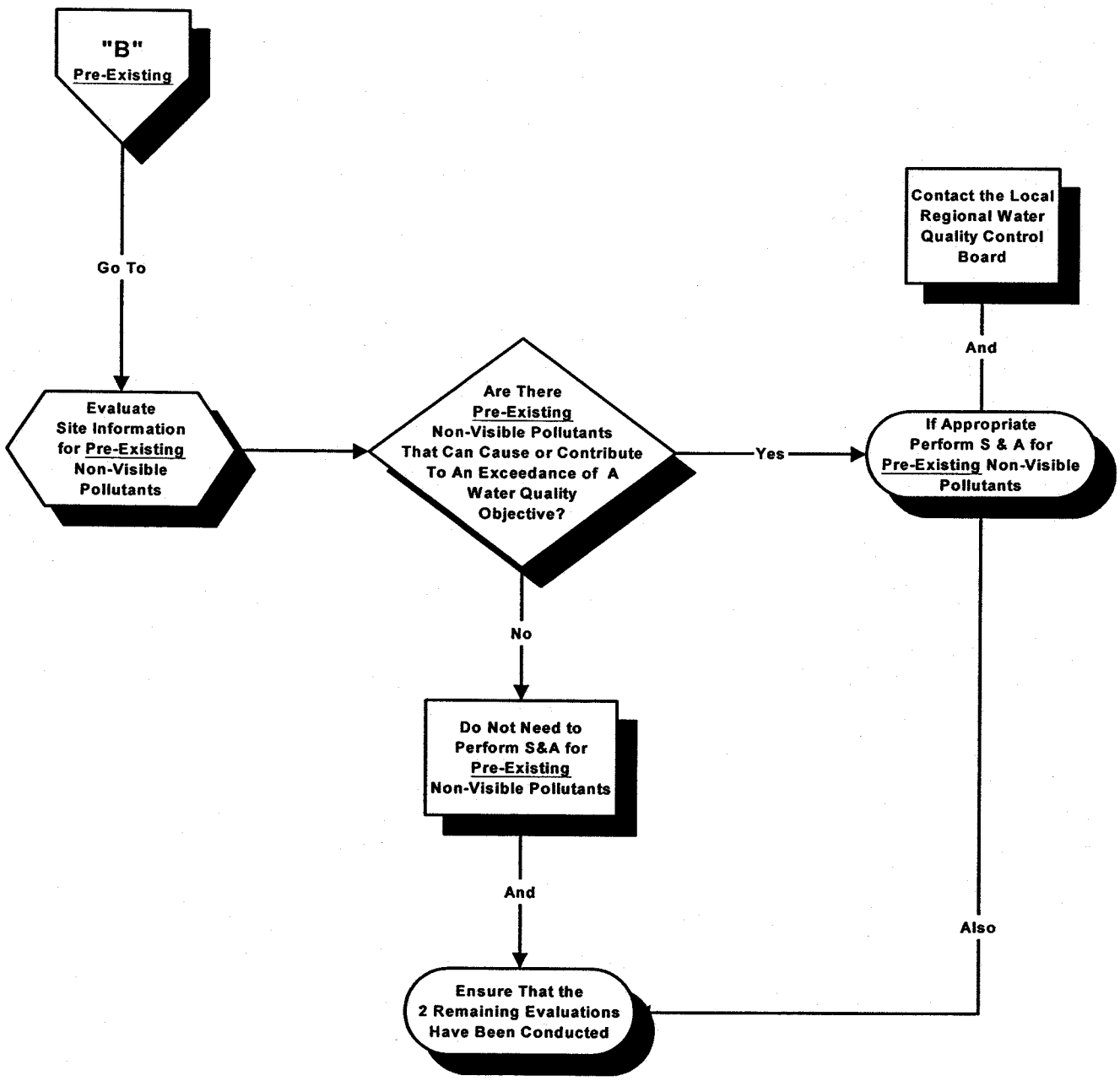



Figure 1.2.1

## Determine If You Must Perform Sampling and Analysis (S&A) for Non-Visible Pollutants From Construction Material

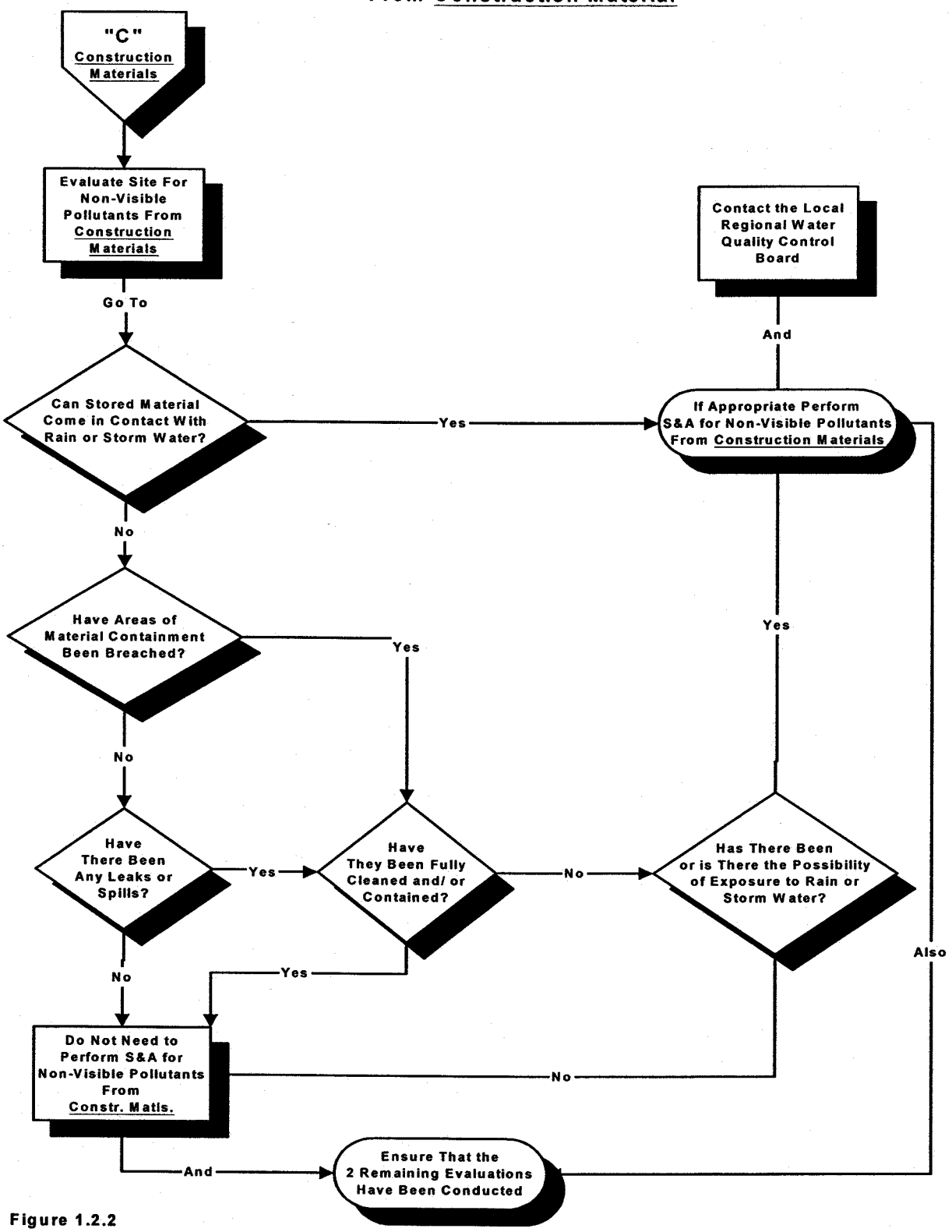



Figure 1.2.2

## Determine If You Must Perform Sampling and Analysis (S&A) for Non-Visible Pollutants From Run-On

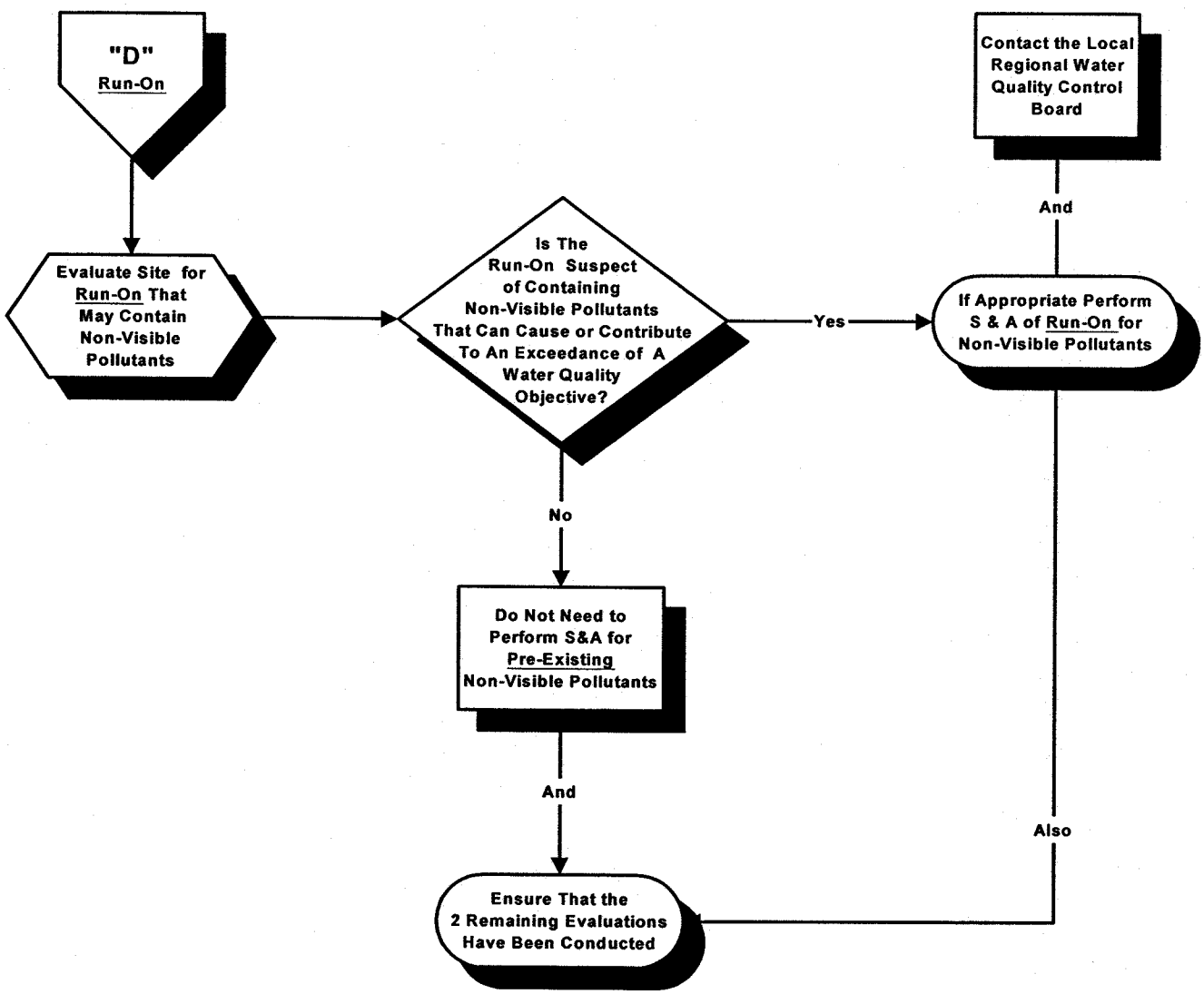



Figure 1.2.3

## 2.0 Sampling Program for Pollutants Not Visually Detectable in Storm Water

The CGP requires sampling and analysis for pollutants not visually detectable in runoff, but which could cause or contribute to an exceedance of water quality objectives in the receiving water. Sample for a constituent if there is reason to expect that it may be in the discharge, regardless of whether or not it is causing or contributing to an exceedence of a water quality objective. First attempt to eliminate the exposure of construction materials to prevent pollution of storm water and thus to limit the requirement for sampling and analysis. Many construction materials, including soil amendments, fertilizers, pesticides, and even things like fencing and wood products, are intended for use outdoors. For such materials, minimize pollutant discharge through implementation of appropriate BMPs. If exposure to these products can contribute pollutants to the runoff at levels that could cause or contribute to exceedance of a water quality objective, then sampling is still required, even if they are used correctly.

## 2.1 What the Permit Says about Sampling

The CGP requires that a sampling and analysis program be developed and conducted for pollutants which:

- Are not visually detectable in storm water discharges,
- Are known or should be known to occur on the construction site, and
- Could cause or contribute to an exceedance of water quality objectives in the receiving water.

Include all pollutants identified in this way in this sampling and analysis strategy and identify them in the SWPPP (as required by Sections A. 5. b. and A. 5. c. of the CGP). The CGP states that the SWPPP must identify a strategy for conducting the sampling and analysis, including the frequency and location(s) at which sampling will be conducted.

Sample for pollutants that would not be visible in runoff if:

- Visual inspections (required before, during and after storm events) indicate that there has been a breach, malfunction, leakage or spill from a BMP that could result in the discharge of pollutants in storm water and the pollutants would not be visually detectable; or
- Storm water comes into contact with soil amendments, other exposed materials, or other on site sources of pollution.

## 2.2 Deciding When to Sample

Conduct proper inspections throughout the duration of the project to make sure that appropriately selected BMPs have been implemented, are being maintained, and are effective. Sample if non-visible pollutants that are known or should be known to occur on the construction site "could cause or contribute to an exceedance of water quality objectives in the receiving water." As discussed in this document, there are numerous receiving water standards found in different documents, including narrative water quality objectives in basin plans. For that reason,

and because of the difficulties associated with linking a discharge from a construction site to exceedance of water quality standards in the receiving waters, conduct sampling and analysis whenever the above conditions are met.

If a determination is made that sampling is needed, collect storm water runoff samples regardless of the time of year, status of the construction site, or day of the week. Collect samples during the first two hours of runoff (during daylight hours). Storm water inspections and sample collections are required even during non-working days (including weekends and holidays).

## 2.3 Deciding What Constituents to Sample for: What are Pollutants Which are "Known or Should be Known " to Occur on a Construction Site?

Pollutants can be considered to be known or should be known to occur on the construction site if they are currently in use or are present as a result of previous land uses. This includes materials that:

- are being used in the construction activities
- are stored on the construction site
- were spilled during construction operations and not cleaned up
- were stored (or used) in a manner that presented the potential for a release of the materials during past land use activities
- were spilled during previous land use activities and not cleaned up
- were applied to the soil as part of past land use activities.

Construction material inventories and the project SWPPP should provide adequate information on materials currently in use or proposed for use on the construction site.

Develop a list of potential pollutants based on a review of potential sources identified in your SWPPP (required by CGP sections A.5.b. and A.5.c.), which will include construction related materials, soil amendments, soil treatments, and historic contamination. Review existing environmental and real estate documentation to determine the potential for pollutants to be present on the construction site as a result of past land use activities. Good sources of information on previously existing pollution and past land uses include Environmental Assessments, Initial Studies, Environmental Impact Reports or Environmental Impact Statements prepared under the requirements of the National Environmental Policy Act or the California Environmental Quality Act, and Phase 1 Assessments prepared for property transfers. In some instances, the results of soil chemical analyses may be available and can provide additional information on potential contamination.

Identify from this list those pollutants that would not be visible in storm water discharges. These are the constituents that you will likely have to sample for in runoff if the materials are

exposed to storm water. Consult with your analytical laboratory or water quality chemist to determine if there are field tests or indicator parameters that can be used.

## 2.4 Deciding Where to Sample

Sample at all discharge locations that drain the areas from which the pollutants may have entered the runoff and at locations that have not come in contact with the pollutants (reference sampling). This allows a comparison of reference samples with the sample(s) collected from storm water suspected of containing construction-related pollutants. The collection of this sample is important in the interpretation of the potentially contaminated sample because it provides information on the characteristics of the storm water without the exposure. For example, if storm water were to come in contact with hydrated lime products, the indicator parameter for pollution would be an elevated pH. The storm water could also be polluted with other materials or minerals, but the elevated pH will provide information necessary for the discharger to make further determinations as to the cause. In this case, a sample of storm water from the same storm event that did *not* come in contact with the hydrated lime would provide an understanding of what the pH of the uncontaminated storm water was in relation to the polluted storm water.

A more accurate background sample would have also contacted the soil and vegetation of the area, further isolating the lime as the source of the elevated pH. This gives the discharger the necessary information to take immediate steps to detain the polluted storm water or to

minimize or eliminate the exposure. Describe the sampling procedure, location and rationale for obtaining the reference sample of storm water in the SWPPP.

Identify sampling locations that provide information on both the runoff quality that is affected by material storage, historic contamination or other exposed potential pollutants, and the background runoff quality (i.e., reference sample). Material storage may be confined to a small area of the project while historic contamination or exposed materials, such as soil amendments, may be widespread throughout the construction site. For this reason, the sampling locations identified for these two types of potential pollutants may be different.

- Collect samples at locations identified in your SWPPP and in areas identified by visual observations/inspections where there has been a BMP failure or breach and which can be safely accessed.

- Collect samples from a location that is not affected by material storage activities or by runoff as a background or reference location.

- For a widespread potential pollutant, select sampling locations at the perimeter of your site, where storm water is unaffected by your activities and compare this to areas that are affected by your activities on the site. Describe the sampling procedure, the location, and the rationale for selecting these locations in the SWPPP.

If the "reference sample" is taken from on-site and it turns out to be carrying a high level of pollutants this should trigger an evaluation of this drainage area. Are there previously

undetected sources of pollutants? It may turn out that additional BMPs may be necessary on this portion of the site or that the discharge must be managed or contained.

If the "reference sample" is taken from off site and it turns out to be carrying a high level of pollutants take a sample on site to determine if the same pollutants are on site and must be managed.

## 2.5 Types of Test Methods?

The CGP requires sampling of non-visible pollutants that "could cause or contribute to an exceedance of water quality objectives in the receiving waters". Unlike sediment, for which there are a limited number of applicable water quality objectives, the applicable water quality standards for "non-visible" pollutants will depend on the material and its chemical makeup. This guidance document contains information on what pollutants may occur on construction sites and which water quality standards may be associated with those pollutants. The best assurance of complying with the receiving water limitations is to prevent or reduce runoff of all polluting substances from construction sites through implementation of effective BMPs.

The sampling and analysis language recognizes that sampling and laboratory analysis, in and of itself, does not protect water quality. Rather, field identification and detection of the source of pollution, followed by timely action is ultimately what will protect the receiving waters. Because of the short-term nature of construction, and the use of different materials during the construction period, laboratory sampling will not generally provide the information needed in an adequate time frame. It is preferable to use field-sampling techniques that can provide immediate information and allow a timely solution.

For this reason, the sampling and analysis language for non-visible pollutants contemplates field sampling using indicator parameters. The correct indicator parameter can provide a quick and immediate indication of contamination of storm water to known materials stored or used on a construction site. Field test kits and devices have been commercially available for decades and widely used for water quality applications. As an example, test strips to evaluate for ammonia, phosphate, chlorine, copper, iron, nitrate, nitrite, and low and high range pH are readily commercially available. Manufacturers and distributors provide technical support as well as training to their customers.

## 2.6 Deciding How Often to Sample

Determine the frequency of sampling for non-visible pollutants based on the exposure of pollutant sources. Sample runoff when BMPs do not effectively prevent or reduce exposure of a non-visible pollutant source to storm water. Sample runoff when inspections identify a BMP failure, which exposed pollutants to storm water. If spills are thoroughly cleaned up and the contaminated material is isolated, eliminating exposure to storm water runoff, sampling is not required. For instances when the potential for previously existing pollution is identified, perform laboratory screening analysis during the first one or two storm events of the season to determine if the potential pollutant is running off the construction site. If construction activity will disturb or mobilize such potential pollutant sources, take samples to determine if the pollutants are being mobilized by the construction activity.

## 2.7 Identification of Pollutant Sources

Information about various construction pollutant sources can be viewed by following the instructions posted on the swrcb.ca.gov web site. In addition, various discharger groups have also produced information that may be useful for determining pollutants sources and sampling parameters for runoff from construction activity. These include a "Pollutant Testing Guidance Table" that lists construction materials, describes whether they would be visible in runoff, and lists pollutant indicators, which will be available on the swrcb.ca.gov/stormwtr/gen_const.html web site

## 2.8 Examples of When Sampling and Analysis for Non-Visible Pollutants Is Not Required

Sampling and analysis is not required under the following conditions. However, a contingency sampling strategy should be prepared in the event of an accidental discharge.

- Where construction takes place entirely during a period of time when there are no rainfall events. Timing construction to occur outside of the rainy season is the most effective BMP.
- Where a construction project is "self-contained", meaning that the project generates no runoff or any potential discharges containing pollutants, including no potential for tracking sediment off-site from vehicle tires, and no potential for discharging products of wind erosion.
- Where construction materials and compounds are kept or used so that they are not in contact with storm water (e.g., in water-tight containers, under a water-tight roof, inside a building, etc.).
- Where for specific pollutants, the BMPs implemented at the construction site fully contain the exposed pollutants (e.g., bermed concrete washout area).
- For building, landscaping and BMP materials that are in their final constructed or in-place form or are designed for exposure (e.g., fence materials, support structures and equipment that will remain exposed at the completion of the project, etc.).
- Where pollutants may have been spilled or released on site, but have been properly cleaned-up and storm water exposure has been eliminated prior to a storm event.
- For stockpiles of construction materials for which both cover and/or containment BMPs have been properly implemented to protect them from run-on and from contributing pollutants to storm water .

## 2.9 Examples of When Sampling and Analysis Is Required

Sampling and analysis is required when non-visible pollutants have the potential to contact storm water and run off the construction site into a storm drainage system or water body at levels that may cause or contribute to exceedance of water quality standards. Some examples of this situation are:

- Where construction materials and compounds are stored or applied such that they may come in contact with storm water runoff.

- For construction projects that utilize soil amendments or soil treatments that can come in contact with storm water runoff. (If you have independent test data available that demonstrates that the soil amendments cannot result in concentration levels in storm water discharges that will cause or contribute to exceedance of applicable water quality standards, sampling and analysis may not be required. Contact the appropriate RWQCB to determine acceptable concentration(s) of the material(s) in question.)

- When a leak or spill occurs that is not fully contained and cleaned prior to a storm event.

- When a leak or spill occurs, during a storm event, and it cannot immediately be isolated and/or cleaned-up, and the possibility of an off-site discharge exists.

- When, during regular inspections, it is discovered that cover and containment BMPs have been compromised and storm water comes in contact with materials resulting in runoff discharging into a storm drain system or water body.

- When material storage BMPs have been compromised, breached, or have failed.

## 2.10 Do I Sample Storm Water Flows Diverted Around My Project for Non-Visible Pollutants?

Dischargers may be faced with a situation where the disturbed area of their construction site is adjacent to a large area that historically has drained across their site. This happens most frequently in foothill situations where schools or commercial development is undertaken alongside an existing roadway, adjacent to a large undisturbed area. In such a situation, calculate the anticipated volume of the flow in order to size a diversion structure to divert the (usually) clean storm water around or though the site. (CGP section A.5.b.1.) It is unwise to allow a large volume of water to wash across a disturbed area. Not only would the run-on cause erosion and remove the soil from the project, but also the discharge would be turbid and violate the Permit requirements. To the extent that the discharger does allow run-on of polluted water to flow across the site, and contaminants in the run-on are not visible, the sampling and analysis requirements apply. Additionally, the CGP (section A. 5. b.) requires that the RWQCB be contacted in the above situation.

The requirement to divert run-on does not authorize the creation of a new point source of pollutants, however. If the run-on contains pollutants from pre-existing pollution in the watershed, the discharger is responsible to determine this before planning the diversion. Should a discharger divert contaminated water around the site and allow it to enter surface waters, this permit does not authorize such discharge and the discharger should be aware that a separate NPDES permit may be required. (See, *Committee to Save Mokelumne River v. East Bay Municipal Utility District* (9th Cir. 1993) 13 F.3d 305, 309.) If you are planning on diverting flows from entering your site and you suspect that they contain pollutants, contact your local RWQCB for advice.

## 2.11 Deciding How to Sample

- Only personnel trained in water quality sampling procedures should collect storm water samples.
- Determine sampling methods and locations in advance of the runoff event in order to provide sufficient time to gather the supplies and equipment necessary to sample and plan for safe access by the sampling personnel.
- General guidance for sampling procedures is provided in Section 4 of this document.

## 2.12 How to Use Your Sampling Data

### 2.12.1 How to Analyze Your Data

Initiate corrective action where non-visible pollutant sample test results indicate presence of pollutants in the construction site storm water runoff. This can be determined by comparing your construction site's storm water test results with the background sample. BMPs must be used to control offsite discharge of any pollutant (e.g., pesticides) that is not naturally occurring, regardless of background levels of that pollutant.

Where your site's storm water test concentrations for naturally occurring substances are considerably above (or, in the case of pH, considerably above or below) the background concentrations, or where other pollutants are found, evaluate the BMPs to determine the cause. Initiate corrective action by repairing, replacing or suplementing the BMPs on your site. Conduct additional sampling during the next runoff event after corrective actions are implemented to demonstrate and document that the problems have been corrected.

This permit does not contain benchmarks. However, method of data analysis for naturally occurring substances employs a similar concept: determining whether the results are "considerably above" the background levels. The term "considerably above" is based upon guidance contained in USEPA's Multi-Sector General Permit, which does use benchmarks. These benchmarks are not numeric storm water effluent limits, are not related or necessarily protective of any specific receiving water, and exceedances of these benchmarks are not automatically considered permit violations. When sample results exceed one or more of the benchmarks, the USEPA recommends dischargers reevaluate the effectiveness of their BMPs and develop, when appropriate, additional BMPs. The use of such benchmark values is a scientifically valid indicator of the presence of pollutants associated with construction activity in the runoff. Since the non-visual pollutants that may occur on construction sites may be similar in type and cause to those on industrial sites, it is valid to use USEPA's approach here. Where a parameter in a sample is being evaluated, and a benchmark is available, the benchmark may be used for comparison purposes. (USEPA does not require any sampling and analysis in its construction permits, and therefore does not have benchmarks for construction activities.)

### 2.12.2 Coordinating Visual Observations with Sampling Results

If visual inspection of storm water BMPs used to contain or otherwise manage (i.e., filter or treat) non-visible pollutants at a construction site indicates that a BMP has failed or been compromised, then field monitoring of any impacted storm water from the site for non-visible pollutants is required. Of course, immediately repair or replace any BMP that has been visually inspected and found breached or compromised. If feasible, contain the polluted discharge and prevent it from being discharged off site. After taking steps to correct the failed BMP, conduct field monitoring in the vicinity of the BMP to verify that pollutants are no longer in the storm water.

The intent of conducting field monitoring for non-visible pollutants is to obtain an immediate indication if storm water that is discharging from a site has been polluted. An immediate indication of a polluted discharge requires an immediate response in the form of backtracking from the point of discharge to find the source and take appropriate measures to prevent a recurrence of a polluted discharge.

### 2.12.3 What To Do If The Data Show a Potential Problem

If your data shows a problem, follow the reporting requirements as shown in the CGP Receiving Water Limitations. In addition, take the following steps as soon as possible:

- Identify the source
- Repair or replace any BMP that has failed
- Maintain any BMP that is not functioning properly due to lack of maintenance
- Evaluate whether additional or alternative BMPs should be implemented

If sampling and analysis during subsequent storm events shows that there is still a problem, then repeat the steps above until the analytical results of "upstream" and "downstream" samples are relatively comparable.

Where your site's storm water results show test concentrations considerably above (or below) background concentrations, evaluate the BMPs to determine what is causing the difference. Possible solutions may include repairing the existing BMPs, evaluating alternative BMPs that could be implemented, and/or implementing additional BMPs (cover and/or containment) which further limit or eliminate contact between storm water and non-visible pollutant sources at your site. Where contact cannot be reduced or eliminated, retain storm water that has come in contact with the non-visible pollutant source on-site and do not allow it to discharge to the storm drainage system or to a water body. Contact your RWQCB to determine whether it is permissible to discharge the retained storm water. Conduct additional sampling during the next runoff event after corrective actions are implemented to demonstrate and document that the problems have been corrected.

## 2.13 Retention of Data

Keep results of field measurements and laboratory analyses with the SWPPP, which is required to be kept on the project site until the Notice of Termination (NOT) is filed and approved by the

appropriate RWQCB. Keep field training logs, Chain-Of-Custody (COC) forms and other documentation relating to sampling and analysis with the project's SWPPP. Records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated or after project completion.

# 3.0 Sampling Program for Sedimentation/Siltation

## 3.1 What the Permit Says About Sampling

Soils, sediments, and fine (suspended) particles that result from grading and earthwork activities and soil erosion from disturbed, un-stabilized land areas are potentially significant sources of storm water pollution at construction sites. The CGP requires construction sites to develop, implement and maintain an effective combination of erosion control and sediment control BMPs to prevent soils, sediments, debris and solids fine enough to remain suspended from leaving the construction site and moving into receiving waters at levels above preconstruction levels.

The CGP requires that a visual survey of the site be done before, during and after a storm. If the visual survey indicates either the potential for a discharge of sediment laden water or that sediment is being discharged, steps must be taken to repair or augment the BMPs to prevent the discharge as soon as possible. Discharge of sediment above predevelopment levels is not allowed.

The CGP requires sampling and analysis for sediment/silt or turbidity when the construction site runoff discharges directly into a water body that is impaired by sedimentation/siltation, sediment, or turbidity (that is, the water body is on the 303(d) list for one or more of these pollutants.) A key point is that the discharge of storm water runoff must directly enter the impaired water body or impaired segment of a water body. Construction site runoff that flows through a tributary or storm drainage system and is commingled with other sources of flow, is not considered a direct discharge even if the flow eventually enters an impaired water body. (See the definition of direct discharge in Section 5 for further details.)

The CGP requires that the SWPPP identify a strategy for conducting the sampling and analysis, including the frequency at which sampling will be conducted. The SWPPP must also describe:

- the location(s) of direct discharges from construction activities to a water body listed on the SWRCB's 303(d) list for sedimentation/siltation, sediment and/or turbidity;
- the designated sampling location(s) in the listed water body representing the prevailing conditions up-stream of the discharge; and
- the designated sampling location(s) in the listed water body representing the prevailing conditions down-stream of the discharge.
- the sampling design which describes the sampling devices used; the sample size; the number of samples to be taken at each location, the laboratory protocol employed; and, if applicable, the statistical test used to determine if the upstream/downstream samples differ to a statistically significant degree.

## 3.2 Deciding When to Sample

- Dischargers must perform sampling if the storm water runoff directly discharges from the construction site to a 303(d) listed water body.
- Dischargers must collect samples during the first two hours of discharge (runoff) from storm events which result in a direct discharge to any 303(d) listed water body. But samples need only be collected during daylight hours (sunrise to sunset).
- Dischargers must collect samples regardless of the time of year, status of the construction site, or day of the week. Samples should be taken during the first two hours of a storm event. Storm water inspections and sample collections are required even during non-working days (including weekends and holidays). Samples must be taken from the same storm event for comparison, concentrations are not comparable across storm events.
- Dischargers do not need to perform upstream/downstream sample collection for more than four (4) rain events per month.

## 3.3. Deciding What Constituent(s) Require Sampling

- If the water body is listed as impaired for sedimentation or siltation, analyze samples for Setteable Solids (mL/L) and Total Suspended Solids (mg/L) according to USEPA 160.2 and USEPA 160.5, respectively. Samples may be analyzed for suspended sediment concentration (SSC) according to ASTM D3977-97 instead of or in addition to Total Suspended Solids and Setteable Solids.
- If the water body is listed as impaired for turbidity, analyze samples for turbidity per USEPA 180.1 or analyze in the field using a correctly calibrated turbidity meter.
- It is very important that consistent sampling and analysis methods are used for all sampling locations.

Table 3-1 shows general sample handling and laboratory requirements for sediment sampling.

Table 3-1
LABORATORY REQUIREMENTS[1] FOR STORM WATER MONITORING OF SEDIMENT, SILTATION AND/OR TURBIDITY

| Parameters | Analytical Method | Target Method Detection Limit | Minimum Sample Volume [2] | Container | Preservative | Holding Time |
|---|---|---|---|---|---|---|
| Total Suspended Solids (TSS) [2] | EPA 160.2 | 1 mg/L | 100 mL | 500 mL polypropylene | Store in ice or refrigerator at 4°C (39.2°F) | 7 days |
| Setteable Solids (SS) | EPA 160.5 | 0.1 mL/L/hour | 1 liter | 1 liter mL polypropylene | Store in ice or refrigerator at 4°C (39.2°F) | 48 hours |
| Suspended Sediment Concentration (SSC) [3] | ASTM D 3977-97 | Contact Laboratory | 200 mL | Contact Laboratory | Store in ice or refrigerator at 4°C (39.2°F) | 7 days |
| Turbidity | EPA 180.1 | 1 NTU | 100 mL | 500 mL polypropylene or glass | Store in ice or refrigerator at 4°C (39.2°F), Dark | 48 hours |

1 The data in this table is a summary of recommended laboratory requirements. For specific USEPA regulatory requirements, consult the sampling and analysis requirements found in 40 CFR 136.
2 Minimum sample volume recommended. Specific volume requirements will vary by laboratory; please check with your laboratory when setting up bottle orders.
3 Use either TSS or SSC, or both, for suspended solids analysis. Upstream and downstream samples should be analyzed by the same method.

## 3.4 Deciding Where to Sample

In-stream sampling is required, both upstream and downstream of the discharge. The CGP does not require that the effluent be sampled. However, effluent sampling is recommended. Take both upstream and downstream samples within the actual flow of the waterbody. Collect samples at the following locations:

- Sample the 303(d) listed water body upstream of the construction site discharge in a location representative of the sediment load present in the water body before it is impacted by discharge from the construction site.

- Sample the 303(d) listed water body at a point immediately downstream of the last point of discharge from the construction site.

Additionally, for the purpose of interpreting the results of the samples collected from the 303(d) listed water body, collect and analyze samples of the actual discharge from the construction site (effluent sample) prior to it being commingled in the receiving water. This sample can be used to verify whether the source of the sediment in-stream is emanating from the construction discharge. Remember that samples should only be collected from safely accessible locations.

In general, sample away from the bank in or near the main current. Avoid collecting samples directly from ponded, sluggish, or stagnant water. Be careful when collecting water upstream or downstream of confluences or point sources to minimize problems caused by backwater effects or poorly mixed flows. Note that samples collected directly downstream from a bridge can be contaminated from the bridge structure or runoff from the road surface.

Choose the upstream location in water that appears to represent the nature of the flow in the stream.

Downstream samples should represent the receiving water mixed with flow from the construction site. For instance if the flow from the site can be observed by either a color or a flow difference, collect the downstream sample from within the affected water.

## 3.5 What Are the Applicable Water Quality Standards

The CGP requires sampling of runoff from construction sites that discharge directly to 303(d) listed water bodies to demonstrate that discharges do not contribute to the impairment of the receiving water. Each of the listed waters is subject to water quality objectives in a RWQCB Basin Plan for sediments and solids or for turbidity. The applicable water quality objectives for each RWQCB are listed in Appendix A to this guidance document.

## 3.6 Deciding How to Sample

- Only personnel trained in water quality sampling procedures should collect storm water samples.

- Determine sampling methods and locations in advance of the runoff event in order to provide sufficient time to gather the supplies and equipment necessary to sample and plan for safe access by the sampling crew(s) and document them in the SWPPP.

- General guidance for sampling procedures is provided in Section 4 of this document.

## 3.7 How to Use Your Data

### 3.7.1 How to Analyze Your Data

While it is desirable for sediment concentrations from a site to be as low as possible, the amount that a site can contribute is determined by a TMDL analysis and in the absence of an implemented TMDL, the instream concentrations below the point of discharge cannot be significantly different from the upstream concentrations.

In order to allow for meaningful analysis of the data, it is necessary to establish a statistical framework for it. When sampling a body of water, it is unlikely that two samples, even taken next to each other, will have the same concentration of a pollutant. This is referred to as variability. Concentrations will vary from sample to sample, but the difference between them may not be meaningful. In order to obtain a statistically meaningful set of samples, it is necessary to determine how many samples will be necessary, the greater the variability between samples, the larger the number of samples (N) will be required. This may require that the water body be sampled before the start of construction to determine the variability. Collect sufficient numbers of samples (N) during each storm event monitored to represent the prevailing conditions of both locations (upstream and downstream). Depending upon which statistical test is used, and the variability between the samples, N will usually be more than a single sample. When comparing samples from a single storm event, a range of readings will be obtained. Almost all samples from that source will fall into that range. The likely range of readings can be expressed through the use of a statistical confidence interval for the parameter being sampled. Confidence intervals are expressed as probabilities, such as 95% confidence or 97% confidence. The size of a confidence interval will be determined by the variability in the samples from the single source and the number of samples collected.

Once the sampling is completed and results returned from the laboratory, compare the concentration of the appropriate parameter (see Section 2.3 Deciding What Constituents to Sample for)) derived from the upstream samples to the concentration of the same parameter from the downstream samples (from the same storm event). It is expected that every sample will be different. (This would be true even if there were not construction activities, in light of the variability of stream conditions, explained above.) Rather, compare the samples to see if there is a statistically significant difference between the central tendency (arithmetic mean, geometric mean, median, etc.) of the upstream samples and the downstream samples.

Estimate the magnitude of the difference in the central tendency between the upstream and downstream concentration values. The null hypothesis to be tested is: The difference between the downstream central tendency and the upstream central tendency is less than or equal to zero. The minimum acceptable confidence interval shall be 90%. Using the data, calculate a one-sided lower confidence limit (LCL) on the difference in central tendencies. If the numeric value of zero

is contained within the confidence interval (LCL), then you cannot reject the null hypothesis, and you would conclude that no impairment has occurred. If, however, the data indicates that the downstream central tendencies are significantly higher than the upstream, you cannot accept the null hypothesis. In this case there is the presumption that the discharges are contributing to the existing impairment.

If you did take samples of the effluent, and those samples are not consistent with the conclusion that the discharge is contributing to the existing impairment, take steps to determine what other source(s) is causing the increase in the downstream sampling. If you can show that there is a different source than your discharge, you should contact the appropriate RWQCB.

The hypothesis, sampling methodology, confidence interval, and statistical tests and assumptions must be defensible to the RWQCB. Since construction sites that discharge *directly* into impaired water bodies are not common in California, the local RWQCB will likely ask to review the SWPPP and the sampling and analysis strategy prior to construction activity.

### 3.7.2 Sources of sediment, silt and turbidity in a construction discharge

Conditions or areas on a site that may be causing sediment, silt, and/or turbidity in your storm water runoff may include:

- Exposed soil areas with inadequate erosion control measures
- Active grading areas
- Poorly stabilized slopes
- Lack of perimeter sediment controls
- Areas of concentrated flow on unprotected soils
- Poorly maintained erosion and sediment control measures
- Unprotected soil stockpiles
- Failure of an erosion or sediment control measure
- Unprotected Clayey soils

### 3.7.3 What To Do If Your Data Shows a Statistically Significant Increase Downstream of the Discharge

The CGP requires that BMPs be implemented on the construction site to prevent a net increase of sediment load in storm water discharges relative to pre-construction levels. Although the upstream reference (background) sample may not be representative of pre-construction levels at your site, it will provide a basis for comparison with the sample taken downstream of the construction site.

If the statistical tests of the upstream and downstream samples indicate an increase in silt, sediment and/or turbidity, follow the reporting requirements as shown in the Receiving Water Limitations of the CGP. If you have collected samples of the discharge from your site, use these results to help identify if it is your project that is discharging sediment into the receiving water. It is recommended that the following steps be taken as soon as possible.

- Identify the source of the silt, sediment or turbidity
- Review effectiveness of existing erosion control BMPs. The sediment may be coming from locations at the construction site where existing erosion control BMPs have been reduced in effectiveness. These BMPs should be evaluated to determine whether they are in need of maintenance.
- Review effectiveness of existing sediment control BMPs. The sediment may be coming from locations at the construction site where existing sediment control BMPs have been reduced in effectiveness. These BMPs should be evaluated to determine whether they are in need of maintenance.
- Look for evidence that there are too few sediment and erosion control BMPs. In inspecting the site, sources of sediment that either do not have BMPs or for which the BMPs appear to be insufficient in number or type may be identified.
- Repair or replace any BMP that has failed or is in need of maintenance
- Evaluate whether additional or alternative BMPs should be implemented to provide an effective combination of erosion and sediment control measures on the site. Do not rely solely on perimeter sediment controls, particularly where there are fine-grained soils (such as silts or clays) on the site. Implement erosion controls (source controls) that keep the soil in place, even on temporary slopes and rough graded areas, wherever possible and as necessary to prevent sediment from leaving the site.

If sampling and analysis during subsequent storm events shows that there is still a statistically significant difference, then repeat the steps above until the analytical results of the upstream concentration samples are within the confidence interval.

## 3.8 Retention of Data

Keep results of field measurements and laboratory analyses with the SWPPP, which is required to be kept on the project site until the NOT is filed and approved by the appropriate RWQCB. Keep training logs, Chain-Of-Custody (COC) forms and other documentation relating to sampling and analysis with the project's SWPPP. All records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated or after project completion.

# 4.0 Sampling Procedures

The collection and handling of storm water runoff samples requires care to ensure the integrity and validity of the samples. A Chain of Custody (COC) form, must follow the sample from the

collection through the analysis process. Additional documentation to track other information of interest, e.g. field conditions, or required field measurements may also be used. This type of information is recorded on a field tracking form.

Collect all samples with care to ensure that the sample is representative of the runoff being tested, use the correct type of container, preserve samples in accordance with the test method's specifications, and store at the appropriate temperature until delivered to an analytical laboratory. Some types of samples have very short holding times and must be analyzed before this holding time is exceeded. Sample handling requirements and documentation form the basis of your sampling quality assurance program.

Before starting any sampling program, contact the analytical laboratory that you plan to use to analyze your samples. Make sure to select a laboratory that will provide you with the support that you need, such as, properly cleaned and preserved sampling containers and COC forms. Some laboratories can assist in identifying courier services available to transport samples to the laboratory, or may be able to provide sampling service for you. Work out all of these details in advance of sample collection. Consult the analytical laboratory on what additional samples will be required for quality assurance and quality control purposes.

Both field and/or analytical analysis methods can be used to meet the Permit requirements. Field techniques have the advantage of providing immediate results, however, there are only a limited number of analyses that can be done in the field. Analytical laboratories can analyze for a wide range of parameters, but the data may take several weeks or longer to get back.

Some constituents (e.g. pH) can be evaluated in the field with special equipment. Field samples must be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Field equipment must be used by trained staff and the equipment must be calibrated and maintained according to the manufacturer's specifications.

Laboratory analyses should be conducted by a laboratory that is currently accredited by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP). Analyses must be conducted in accordance with 40 CFR Part 136.

You may refer to the California Department of Transportation (Caltrans) *Guidance Manual: Stormwater Monitoring Protocols (Second Edition), July 2000* to assist you in developing a sampling and analysis program. This document may be downloaded from the Caltrans Website, at

http://www.dot.ca.gov/hq/construc/stormwater/SamplingGuidanceManual.pdf

Figure 4-1 is an outline for a typical comprehensive storm water sampling and analysis plan. As some laboratories may have specific requirements for sample collection and handling, specific information or requirements on your samples should be checked with your laboratory.

1 PROJECT OVERVIEW/DESCRIPTION
- 1.1 Description of why the project is being conducted
- 1.2 Description of who is conducting the project
- 1.3 General scope of monitoring activities
- 1.4 Project organization/roles and responsibilities

2 MONITORING SITES
- 2.1 Site location (map)
- 2.2 Written driving directions
- 2.3 Site access instructions (gates, locks, keys, combinations)
- 2.4 Notification procedures

3 ANALYTICAL CONSTITUENTS
- 3.1 List of constituents for sampling and analysis (including sample collection methods, container type, volume required, preservation and laboratory performing analysis)

4 DATA QUALITY OBJECTIVES (DQOs)
- 4.1 Analytical reporting limits
- 4.2 Analytical precision, accuracy and completeness

5 FIELD EQUIPMENT MAINTENANCE
- 5.1 Equipment calibration
- 5.2 Equipment maintenance
- 5.3 Equipment cleaning (bottles/lids/tubing)

6 MONITORING PREPARATION AND LOGISTICS
- 6.1 Weather tracking
- 6.2 Storm selection criteria
- 6.3 Storm action levels
- 6.4 Communications/notification procedures
- 6.5 Sample bottle order
- 6.6 Sample bottle labeling
- 6.7 Field equipment preparation

7 SAMPLE COLLECTION, PRESERVATION AND DELIVERY
- 7.1 Sample collection methods
- 7.2 Field measurement methods
- 7.3 Field equipment list
- 7.4 Sample containers, preservation and handling
- 7.5 QA/QC sample collection methods
- 7.6 Sample labeling (site names, codes, etc.)
- 7.7 Composite sample splitting
- 7.8 Forms and procedures for documenting sample collection and field measurements
- 7.9 Laboratory communication procedures
- 7.10 Sample shipping/delivery, chain-of-custody

8 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)
- 8.1 Field procedures for QA/QC sample collection

9 LABORATORY SAMPLE PREPARATION AND ANALYTICAL METHODS
- 9.1 Laboratory sample preparation procedures
- 9.2 Analytical constituent table (including analytical methods, holding times and reporting limits)

10 DATA MANAGEMENT AND REPORTING PROCEDURES
- 10.1 Analytical data validation
- 10.2 Electronic data transfer
- 10.3 Filing of electronic and hard copy data
- 10.4 Reports

APPENDICES
- A Clean Sampling Techniques
- B Health and Safety Plan

*Figure 4-1 Outline for a Typical Storm Water Sampling and Analysis Plan*

# 5.0 Definitions

### Chain of Custody (COC) Form
The COC Form is a form used to track sample handling as samples progress from sample collection to the analytical laboratory. The COC is then used to track the resulting analytical data from the laboratory to the client. COC forms can be obtained from an analytical laboratory upon request.

### Direct Discharge
Direct discharge means storm water runoff that flows from a construction site directly into a 303(d) water body listed for sedimentation, siltation, or turbidity. Storm water runoff from the construction site is considered a direct discharge to a 303(d) listed water body unless it first flows through:

1) A municipal separate storm sewer system (MS4) that has been formally accepted by and is under control and operation of a municipal entity;

2) A separate storm water conveyance system where there is co-mingling of site storm water with off-site sources; or

3) A tributary or segment of a water body that is not listed on the 303d list before reaching the 303d listed water body or segment.

### Discharger
The discharger is the person or entity subject to the CGP.

### Electrical Conductivity (EC)
EC is a measure of the ability of water to carry an electric current. This ability depends on the presence of ions, their concentration, valence, mobility and temperature. EC measurements can give an estimate of the variations in the dissolved mineral content of storm water in relation to receiving waters.

### Field Measurements
Field measurements refers to water quality testing performed in the field with portable field-testing kits or meters.

### Field Tracking Form (FTF)
The FTF is a form that serves as a guide to sampling crews to obtain sampling information and to prescribe and document sample collection information in the field. The FTF usually contains sample identifiers, sampling locations, requested analyses, Quality Control (QC) sample identifiers, special instructions, and field notes.

### Holding Time
Holding time is specified by the analytical method and is the elapsed time between the time the sample is collected and the time the analysis must be initiated.

### pH

The pH is universally used to express the intensity of the acid or alkaline condition of a water sample. The pH of natural waters tends to range between 6 and 9, with neutral being 7. Extremes of pH can have deleterious effects on aquatic systems.

### Reference Sample

A sample taken from an undisturbed part of the construction site or from an undisturbed site immediately upstream from a construction site. The reference sample is used for comparison with samples taken from the active construction site. It is the same set of samples that is referred to as an uncontaminated sample in the Permit.

### Sampling and Analysis Plan

A document that describes how the samples will be collected and under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be maintained to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols).

### Sediment

Sediment is solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

### Sedimentation/Siltation

Sedimentation/siltation is the process of sediment/silt deposition.

### Setteable Solids

The setteable solids (SS) test measures the solid material that can be settled within a water column during a specified time frame. This typically is tested by placing a water sample into an Imhoff settling cone and allowing the solids to settle by gravity. Results are reported either as a volume (mL/L) or a weight (mg/L).

### Silt

Silt are soil particles between 0.05mm and 0.002mm in size. (For the purposes of its use here, it also includes clay, which is categorized by a particle size less than 0.002mm.)

### Soil Amendment

Any material that is added to the soil to change its chemical properties, engineering properties, or erosion resistance that could become mobilized by storm water. Certain soil amendments may not be visible in site runoff. Soil amendments likely to fall in this category include lime, cementitious binders, chlorides, emulsions, polymers, soil stabilizers, and tackifiers applied as a stand-alone treatment (i.e., without mulch). Even some of these products may bind with the soil, and thus be visible. In contrast, plant fibers (such as straw or hay), wood and recycled paper fibers (such as mulches and matrices), bark or wood chips, green waste or composted organic materials, and biodegradable or synthetic blanket fibers are soil amendments that are likely to be visible in storm water runoff.

### Suspended Sediment Concentration (SSC)

The suspended sediment concentration (SSC) test measures the concentration of suspended solid material in a water sample by measuring the dry weight of all of the solid material from a known volume of a collected water sample. Results are reported in mg/L.

### Total Suspended Solids (TSS)

Suspended solids in a water sample include inorganic substances, such as soil particles and organic substances, such as algae, aquatic plant/animal waste, particles related to industrial/sewage waste, etc. The total suspended solids test (TSS) test measures the concentration of suspended solids in water by measuring the dry weight of a solid material contained in a known volume of a sub-sample of a collected water sample. Results are reported in mg/L.

### Turbidity

Cloudiness of water quantified by the degree to which light traveling through a water column is scattered by the suspended organic and inorganic particles it contains. The scattering of light increases with a greater suspended load. Turbidity is commonly measured in Nephelometric Turbidity Units (NTU).

# 6.0 Sources of Further Assistance

## Regional Water Quality Control Boards

| Regional Water Quality Control Board | Address | Contact Name<br>E-mail | Telephone/Fax |
|---|---|---|---|
| NORTH COAST REGION | 5550 Skylane Blvd., Suite A<br>Santa Rosa, CA 95403 | John Short<br>shorj@rb1.swrcb.ca.gov | (707) 576-2065<br>FAX: (707) 523-0135 |
| SAN FRANCISCO BAY REGION | 1515 Clay St., Suite 1400<br>Oakland, CA 94612 | Mark Johnson<br>stu36@rb2.swrcb.ca.gov | (510) 622-2493<br>FAX: (510) 622-2460 |
| CENTRAL COAST REGION | 895 Aerovista Place., Suite 101<br>San Luis Obispo, CA 93401 | Jennifer Bitting<br>jbitting@rb3.swrcb.ca.gov | (805) 549-3334<br>FAX: (805) 543-0397 |
| LOS ANGELES REGION | 320 W. 4th St., Suite 200<br>Los Angeles, CA 90013 | Ejigu Soloman (Ventura County)<br>esoloman@rb4.swrcb.ca.gov | 213) 576-6727<br>FAX: (213) 576-6686 |
| CENTRAL VALLEY REGION<br>Sacramento Office | 11020 Sun Center Drive, #200<br>Rancho Cordova, CA 95670 | Sue McConnell<br>mcconns@rb5s.swrcb.ca.gov<br><br>George Day<br>DayG@rb5s.swrcb.ca.gov<br><br>Dannas Berchtold<br>BerchtD@rb5s.swrcb.ca.gov<br><br>Rich Muhl<br>MuhlR@rb5s.swrcb.ca.gov | (916) 464-4798<br>FAX: (916) 464-4681<br><br>(916) 464-6404<br>FAX: (916) 464-4681<br><br>(916) 464-4683<br>FAX: (916) 464-4681<br><br>(916) 464-4749<br>FAX: (916) 464-4681 |
| CENTRAL VALLEY REGION<br>Fresno Branch Office | E. Street<br>Fresno, CA 93706 | Brian Erlandsen<br>ErlandsenB@rb5f.swrcb.ca.gov | (559) 445-6046<br>FAX: (559) 445-5910 |
| CENTRAL VALLEY REGION<br>Redding Branch Office | 415 Knollcrest Dr.<br>Redding, CA 96002 | Carole Crowe<br>crowec@rb5r.swrcb.ca.gov | (530) 224-4849<br>FAX: (530) 224-4857 |
| LAHONTAN REGION<br>South Lake Tahoe Office | 2501 Lake Tahoe Blvd.<br>South Lake Tahoe, CA 96150 | Jason Churchill<br>Jchurchill@rb6s.swrcb.ca.gov | (530) 542-5571<br>FAX: (530) 544-2271 |
| LAHONTAN REGION<br>Victorville Office | 15428 Civic Dr., Suite 100<br>Victorville, CA 92392 | Doug Feay<br>Dfeay@rb6v.swrcb.ca.gov<br><br>Ted Saari<br>Tsaari@rb6v.swrcb.ca.gov | (760) 241-7353<br>FAX: (760) 241-7308<br><br>(760) 241-7407 |

| Regional Water Quality Control Board | Address | Contact Name<br>E-mail | Telephone/Fax |
|---|---|---|---|
| COLORADO RIVER BASIN REGION | 73-720 Fred Waring Dr., Suite 100<br>Palm Desert, CA 92260 | Abdi Haile<br>haila@rb7.swrcb.ca.gov<br><br>Rosalyn Fleming<br>flemr@rb7.swrcb.ca.gov | (760) 776-8939<br>FAX: (760) 341-6820<br><br>(760) 776-8939<br>FAX: (760) 341-6820 |
| SANTA ANA REGION | 3737 Main St., Suite 500<br>Riverside, CA 92501-3339 | Michael Roth (Riverside County)<br>mroth@rb8.swrcb.ca.gov<br><br>Aaron Buck (Orange County)<br>abuck@rb8.swrcb.ca.gov<br><br>Muhammad Bashir (San Bernardino County)<br>mbashir@rb8.swrcb.ca.gov | (909) 320-2027<br>FAX: (909) 781-6288<br><br>(909) 782-4469<br>FAX: (909) 781-6288<br><br>(909) 320-6396<br>FAX: (909) 781-6288 |
| SAN DIEGO REGION | 9174 SkyPark Court, Suite 100<br>San Diego, CA 92123 | Benjamin Tobler<br>Toblb@rb9.swrcb.ca.gov<br><br>Eric Becker<br>Becke@rb9.swrcb.ca.gov<br><br>Ben Neill<br>Neilb@rb9.swrcb.ca.gov | (858) 467-3272<br><br>(858) 492-1785<br><br>(858) 467-2983<br>FAX: (858) 571-6972 |

State Water Resources Control Board
Division of Water Quality
Storm Water Permit Section
P.O. Box 1977
Sacramento, CA 95812-1977
Construction Inquiry Line: (916) 341-5537
Web Site: http://www.waterboards.ca.gov/
e-mail: stormwater@waterboards.ca.gov

**How to Obtain a List of State Certified Laboratories**
http://www.dhs.ca.gov/ps/ls/elap/html/lablist_county.htm

## Other Useful Web Sites

California Stormwater Quality Association http://www.casqa.org/

California Department of Transportation
Environmental Program http://www.dot.ca.gov/hq/env/index.htm

Storm Water Management Program http://www.dot.ca.gov/hq/env/stormwater/

## 7.0 Explanation of Sampling and Analysis Requirements

The sampling and analysis provisions were added to the CGP in response to the writ of mandate issued in *San Francisco BayKeeper v. California State Water Resources Control Board* (Sacramento County Superior Court, No. 99CS01929). The SWRCB has now been directed to provide explanation and direction for dischargers subject to the sampling and analysis requirements. One issue that is at the heart of this direction is that the SWRCB must explain how dischargers should interpret the results of the required sampling and analysis in deciding whether they are in compliance with the permit's receiving water limitations requirements. In essence, can the sampling and analysis results be used to provide a reliable answer to the question whether the discharge is causing or contributing to exceedance of water quality standards? As is explained below, the answer is a qualified "yes," in that the results must by used in concert with other information and in accordance with a logical process exercising best professional judgment. The results from the sampling and analysis will provide information regarding whether or not the BMPs are effective, and may provide some evidence of causing or contributing to exceedance of water quality standards. But the sampling and analysis requirements in a storm water permit are ultimately a diagnostic tool, and are not a guaranteed method of determining compliance with the receiving water limitations.

## 7.1 Requirement for Compliance With Water Quality Standards

The SWRCB is well aware of the requirement that it must issue industrial storm water permits, including the CGP, with requirements that require "strict compliance" with water quality standards. (CWA §402(p)(3)(A).) It is also aware that USEPA has concluded that in general it is not appropriate or legally required to include numeric, water quality-based effluent limitations in storm water permits. (40 CFR 122.44(k)(2).) In addition, we note that USEPA does not require sampling and analysis in industrial storm water permits (40 CFR §122.44(i)(4)) and it has elected not to include any sampling or analysis requirements in its own recently issued general construction permit. (See, http://cfpub.epa.gov/npdes/stormwater/cgp.cfm.) USEPA has explained the limitations of sampling and analysis in industrial storm water permits. (See, 57 Fed. Reg. 11394 et seq. (1992).)

USEPA has addressed the relationship between BMPs and water quality standards, and has determined that almost all storm water discharges can be adequately controlled to meet water quality standards through BMPs. (NPDES Storm Water Program Questions and Answers, 1/21/04.) USEPA states that to evaluate effectiveness, NPDES permits may at the discretion of the permitting authority require visual inspections, evaluation of environmental indicators or measurable goals, effluent monitoring, or in-stream monitoring. (*Id.*) USEPA has made clear, both in its regulations and its guidance documents, that monitoring requirements are not necessary to enforce compliance with water quality standards. (In fact, neither EPA nor any state we are aware of has chosen to include monitoring requirements equivalent to, or more robust than, those already in place in the CGP.) Certainly, there is no legal requirement that the permitting authority must "prove" that a specific monitoring result is conclusive evidence of exceedance of a water quality standard. USEPA has conducted studies and modeling showing that existing permit programs as of 2003 were already capable of controlling approximately 80-90% of sediment runoff from construction sides, and that more stringent rules would remove

only 1% more. (USEPA Withdrawal of Proposed Effluent Limitation Guideline for Construction Industry, Volume 69, Federal Register 22472 et seq., April 26, 2004.) In conducting its state equivalency analysis, USEPA evaluated all states' programs, including California's, and determined that these were adequate and that further requirements were not mandated for compliance with federal law.

In USEPA's analysis of monitoring for construction (EPA-821-R-02-007), it concludes that planning monitoring for storm water is not possible because the flows are highly variable and temporarily stochastic. USEPA also notes that several of the criteria that could be used have special measurement problems because they are based on trapping efficiency, which is very difficult to measure. The most commonly used measurements, such as TSS, also have problems because to measure average or peak TSS it is necessary to measure TSS in the effluent over the duration of the outflow hydrograph as well as the flow rate. This requires that multiple samples be taken and that the samples be centered around the peak discharge. This is time consuming and difficult since the timing of an event and the timing of the peak discharge are not known beforehand. The average concentration is a weighted concentration, using flow rate as a weighting function.

USEPA also conducted an extensive evaluation of the literature to identify pollutants present in storm water discharges from construction sites. They found that while the literature contains extensive information on pollutants present in storm water discharges from urban areas, there were little data available on pollutants present in storm water discharges from construction sites during the active construction phase, other than for sediment, TSS and turbidity. USEPA was not able to identify sufficient data in the literature to warrant development of controls specific to pollutants other than sediment, TSS and turbidity in storm water discharges from construction sites. Some literature suggests that pollutants adhere to sediment, so that regulating TSS should also act as a control for other pollutants.

USEPA also evaluated the inclusion of organics, pesticides, and bacteria as potential pollutants of concern, but the literature indicated that control of these pollutants through conventional storm water management strategies is potentially much more difficult, and that there are little data linking their presence in storm water discharges directly with new land development activities. Source control (implementation of BMPs) may factor greatly into controlling these pollutant sources.

Permit compliance is based on the degree of control that can be achieved using various levels of pollution control technology (BMPs), a visual inspection requirement, coupled with parameter sampling in the instances where exposure has been determined. A storm water sample for non-visible pollutants indicating contamination is not conclusive proof of either a receiving water violation or of compliance with the Permit. But, it should give the discharger enough information to eliminate the source, detain the discharge, improve the BMPs, or take whatever action is necessary to abate the problem.

In the case of a direct discharge of sediment to a water body listed as impaired by sediment, sampling downstream of the discharge that shows a statistically significant increase in sediment over the upstream monitoring is strong evidence that the discharge from the construction site is causing or contributing to the impairment. We have suggested, however, that dischargers who

conduct such sampling should also sample the effluent. They may use the results of such sampling to overcome this presumption should the effluent sampling not be consistent with the downstream results. The case of a direct discharge of sediment to a water body impaired by sediment is a far simpler case than discharges that are indirect, that contain pollutants for which there may be assimilative capacity, or that contain pollutants that may be diluted in the receiving water. In those cases there is no simple way to conclude from sampling and analysis whether an applicable water quality standard is impacted by the storm water discharge. Instead, the data are most useful in alerting the discharger to the need to review BMPs and source control and should trigger a visual inspection.

The final determination as to whether discharges are in compliance with water quality standards will be made by RWQCBs through enforcement and other compliance activities. The sampling and analysis results are relevant, as is visual inspection and evaluation of BMPs. This method of assessment is known as "best professional judgment" and is consistent with USEPA's approach to regulating storm water discharges. This is the appropriate and lawful method of regulation pending adoption of effluent limitation guidelines by USEPA. (CWA §301.) USEPAproposed such guidelines for construction sites, but decided against adopting effluent limitation guidelines for storm water discharges associated with construction activity. (Effluent Guidelines Construction and Development Fact Sheet: Final Action - Selection of Non-Regulatory Option; EPA 821-F-04-001; March 2004; final action is at Volume 69, Federal Register 22472 et seq., April 26, 2004.) In taking this Final Action, USEPA concluded that the current system that allows states to develop their own programs is adequate and will result in "significant improvements in water quality and in the control of discharges of construction site stormwater runoff." In conducting its investigation of existing programs, USEPA found that every state already has regulations and programs in place that incorporate most of the provisions that USEPA considered in its most stringent proposal. USEPA further states that the following components of a construction program are: (1) Require preparation of a SWPPP; (2) Require site inspections by dischargers on a regular basis; (3) Require a combination of erosion and sediment controls; and (3) Require stabilization of soils after construction. USEPA decided that the existing programs (which do not require monitoring) are adequate and that any further regulatory requirements imposed by USEPA would be too costly and "would provide only marginal environmental improvements over regulations already in place." USEPA further concluded that additional controls would make housing unaffordable. Even when USEPA initially proposed adopting an effluent limitation guideline, it rejected even considering any monitoring requirements. In discussing the option of requiring monitoring in construction permits, USEPA listed several concerns, including that a national monitoring requirement would be impractical and that monitoring receiving waters at most construction sites is infeasible. (Effluent Limitation Guidelines and New Source Performance Standards for the Construction and Development Category: Proposed Rule, 67 Federal Register 42644, 42658-9 (6/24/02).) USEPA concluded that: "All of these factors would add significant expense to the construction process, with little or no added assurance in the effectiveness of control measures or expected environmental benefits." (*Id.*)

## 7.2 Background Contamination

The Court asked the SWRCB to explain the need for background (reference ) sampling for non-visual pollutants. In essence, the Court question is why is it relevant whether the construction activity "increased" the level of pollutants in the runoff if pre-existing pollutants in runoff could also be of concern. There are several responses to this question. First, the CGP is intended to be a permit for storm water discharges associated with construction activity. (CWA §402(p); construction that disturbs greater than one acre is considered an industrial activity (40 CFR §122.26(b)(14)(x) and (15).) At this time, Congress has determined that it is not appropriate to regulate storm water runoff in general, and that only specified types of storm water discharges are subject to permitting. In fact, even at industrial sites, only the portions of the site that are used for industrial activities are subject to permitting. (40 CFR §122.26(b)(14).) Second, the focus of the CGP is on BMPs, and assuring that they are effective in preventing pollutants associated with construction activity from entering receiving waters. Where there are pollutants entering receiving waters, the required action is, through the iterative process in the Receiving Water Limitations, to evaluate and improve BMPs. Eliminating the source of contamination is the most direct and desirable approach to regulating construction runoff.

Regardless of whether a construction site owner *could* be held liable for historical contaminants running off the site, the purpose of the "reference" sample is clear: the permit does not contain numeric effluent limitations and is based on the BMP approach.[1] The two samples compare whether the BMPs that have been installed to prevent the non-visible pollutants associated with construction activity from entering receiving waters are effective. If "control samples" were not taken, the use of sampling to help determine permit compliance would be thwarted. If BMPs, including good housekeeping (source control) BMPs, are properly installed and maintained, they will effectively control the transportation of most pollutants. The background sampling will verify this fact. It is noted that the permit does require identification of historical pollutants, including pollutants that are the result of past usage. (CGP section A.5.b.3.) Sampling for these pollutants is required if the construction activity (e.g., disturbance of soil impacted by prior use) result in the mobilization and runoff of these pollutants.

The Court stated that USEPA documents indicate that reference sample collection and comparison may be unsuitable for persistent bio-accumulative pollutants. (The court cited USEPA's Water Quality Guidance for the Great Lakes System: Supplementary Information Document (GLSID), at p. 63.) A California Court of Appeal recently had occasion to discuss the appropriate regulation of persistent bio-accumulative pollutants in NPDES permits. In *Communities for a Better Environment v. SWRCB* (2003) 109 Cal. App. 4th 1089 (hrg. denied), the court upheld a permit for a refinery that did not include final numeric effluent limitations for dioxins, which are bio-accumulative pollutants. The court upheld an approach relying on BMPs and a watershed approach to dealing with persistent bio-accumulative pollutants through other methods, such as a TMDL. The GLSID adopted by USEPA describes a watershed approach to controlling and eliminating persistent pollutants, which will include adoption of TMDLs. (See, GLSID at p. 247) It is not limited to adoption of NPDES permits, and does not even address

[1] The Court has upheld this approach. See, Ruling on Submitted Matter, *San Francisco BayKeeper v. California SWRCB*, p. 5-6.

construction storm water permits in the region. The reference on page 63 concerns the appropriate approaches for TMDLs, not for construction storm water permits. USEPA concludes in the GLSID that the TMDL process is the appropriate means of effectively addressing persistent bio-accumulative pollutants.

Pollutants such as the Persistent Bio-accumulative and Toxic chemicals (PBT) currently being addressed under USEPA's PBT initiative [2] are not closely associated with modern day construction activity. The listed pesticides could possibly be found, however, as historic pollutants in the soil if the construction site had been used for agriculture prior to the 1970s (the 1990s in the case of toxaphene). Information about PBTs can be found through http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml Persistent bio-accumulative pollutants are strongly associated with soils and soil particles, so an aggressive erosion and sediment control program combined with visual inspections is the most understandable and cost-effective approach to controlling the discharge of such pollutants from construction activity.

If the area that the construction site is located in has prior contamination from PBTs, such issues should be dealt with on a watershed-based approach, such as a TMDL for the particular pollutant. The Construction CGP is not intended to address such issues. On the other hand, the permit does require all dischargers to control soil erosion and the movement of products of erosion off the site via the storm water discharge. Mobilization of pesticide residue by construction activity may trigger sampling and analysis requirements.

## 7.3 Parameters to Sample for to Determine the Presence of Non-Visible Pollutants in Runoff

It has been suggested that construction dischargers should consult the CTR, and then design a sampling strategy to sample their discharge for all non-visible CTR pollutants based on the numerical values provided. The CTR pollutants and numerical limits, however, have limited relevance to construction activity or storm water pollution from construction sites. The CTR pollutants currently known to be used and commonly found on construction sites can be found through http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

Of greater concern for construction discharges are the pollutants found in materials used in large quantities throughout California and exposed throughout the rainy season such as cement, fly-ash, and other recycled materials or by-products of combustion. (But many of these materials may be visible in runoff, affecting color for example.) The water quality standards for these materials will depend on their composition. Some of the more common storm water pollutants from construction activity such as glyphosate (herbicides), diazinon and chlopyrifos (pesticides), nutrients (fertilizers), and molybdenum (lubricants) are not CTR pollutants. The use of diazinon and chlopyrifos is a common practice among landscaping professionals and may trigger sampling and analysis requirements if applications come into contact with storm water.

Other more common storm water contamination problems resulting from construction activity such as high pH values from cement and gypsum, high pH and TSS from wash waters and

[2] http://www.epa.gov/opptintr/pbt/aboutpbt.htm

chemical and fecal contamination from portable toilets are also not CTR pollutants. Some of these constituents do have numeric water quality objectives in individual Basin Plans, but many do not and are subject to narrative water quality standards such as not causing toxicity. This Fact Sheet provides direction on how to ascertain the applicable water quality standards for the receiving water. Of more use will be information the SWRCB will distribute upon completion of a contract with the University of California, which will list the most common pollutants, describe which construction materials they are associated with, and suggest parameters for sampling. At this time, dischargers are encouraged to discuss these issues with RWQCB staff and their own knowledgeable representative or Storm Water Quality Professionals..

## 7.4 The Watershed Approach to Storm Water Permitting

USEPA has endorsed a watershed approach to storm water permitting that focuses on BMPs in lieu of numeric effluent limitations and visual inspection and indicator monitoring in lieu of sampling for individual pollutant parameters. (Questions and Answers Regarding Implementation of an Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits, 61 Fed. Reg. 57424 (11/6/96)). In a memorandum dated November 22, 2002, USEPA issued guidance on the interaction between storm water permits and TMDLs. The memorandum explains that, even in the case where a TMDL has been finalized and a wasteload allocation established for storm water discharges, the inclusion of numeric effluent limitations will be "rare." The memorandum therefore discusses monitoring requirements in BMP-based permits. It states that the monitoring should assess the effectiveness of the BMPs (i.e., appropriate monitoring is visual inspection) and *if monitoring for storm water is required*, it should be consistent with the state's watershed approach.

## 7.5 References and Record for this Guidance Document

In preparing this guidance document, the SWRCB has relied upon numerous background materials including federal statutes, regulations and guidance materials. These materials include Clean Water Act sections 303(d) and 402(p) and federal regulations implementing section 402(p) including 40 CFR sections 122.26, 122.44, 122.48, and Part 131. The SWRCB has also relied several guidance documents from USEPA. These include the preambles to the various storm water regulatory actions: 55 Fed. Reg. 47990 et seq. (11/16/90), 57 Fed. Reg. 11394 et seq. (4/2/92), and 64 Fed. Reg. 68722 et seq. The SWRCB has relied on the Porter-Cologne Water Quality Control Act (Water Code section 13000 et seq.), and implementing state regulations at Title 23, California Code of Regulations. The SWRCB has also relied on relevant court decisions, including: *Communities for a Better Environment v. SWRCB* (2003) 109 Cal. App. 4th 1089 (hrg. denied) (Water Boards have broad discretion in adopting effluent limitations for impaired waters). The SWRCB has also reviewed the recently-adopted USEPA general construction permit, published at http://cfpub.epa.gov/npdes/stormwater/cgp.cfm. and USEPA's decision not to adopt effluent limitations guidelines for storm water discharges from construction activities (Volume 69, Federal Register 22472 et seq., April 26, 2004) The SWRCB has also reviewed the USEPA multi-sector general permit for industrial activities (65 Fed. Reg. 64746 et seq. (10/30/00) and a general construction permit issued by USEPA Region IV (65 Fed. Reg 25122 et seq. (4/28/00). The record also contains submittals received by the SWRCB from

interested persons including the Keepers organizations, the Building Industry Legal Defense Foundation and the California Building Industry Association.

# APPENDIX A
# WATER QUALITY OBJECTIVES FOR SUSPENDED MATERIALS, SETTEABLE MATERIALS, SEDIMENT AND TURBIDITY

Below is a compilation of the water quality objectives for suspended materials, setteable material, sediment and turbidity as of August 2003 for each of the Regional Water Quality Control Boards. The water quality objectives are found in chapter 3 (unless otherwise noted) of the RWQCB's Basin Water Quality Control Plan (Basin Plan). Some of the weblinks go directly to Chapter 3 and others will go to the Basin Plan.

## North Coast Regional Water Quality Control Board - Region 1

http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/

Suspended Material
Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Setteable Material
Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity
Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

## San Francisco Bay Regional Water Quality Control Board - Region 2

http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml#2004basinplan

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. Controllable water quality factors shall not cause a detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life.

Setteable Material
Waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses.

Suspended Material
Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.

## Central Coast Regional Water Quality Control Board - Region 3

http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/index.shtml

Suspended Material
Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Setteable Material
Waters shall not contain setteable material in concentrations that result in deposition of material that causes nuisance or adversely affects beneficial uses.

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

Increase in Turbidity attributable to controllable factors shall not exceed the following limits:

1. Where natural turbidity is between 0 and 50 Jackson Turbidity Units (JTU), increases shall not exceed 20 percent.
2. Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU
3. Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.

Allowable zones of dilution within which higher concentrations will be tolerated will be defined for each discharge in discharge permits.

## Los Angeles Regional Water Quality Control Board - Region 4

http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/

Solid, Suspended, or Setteable Materials
Waters shall not contain suspended or setteable material in concentrations that cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in natural turbidity attributable to controllable factors shall not exceed the following limits:

Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20%.

Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%.

Allowable zones of initial dilution within which higher concentrations will be tolerated may be defined for each discharge in specific Waste Discharge Requirements.

**Central Valley Regional Water Quality Control Board - Region 5**

Sacramento River and San Joaquin River Basins

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Setteable Material
Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

Suspended Material
Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

Exceptions to the above limits will be considered when a dredging operation can cause an increase in turbidity. In those cases, an allowable zone of dilution within which turbidity in excess of the limits may be tolerated will be defined for the operation and prescribed in a discharge permit.

For Folsom Lake (50) and American River (Folsom Dam to Sacramento River) (51), except for periods of storm runoff, the turbidity shall be less than or equal 10 NTUs. To the extent of any conflict with the general turbidity objective, the more stringent applies.

For Delta waters, the general objectives for turbidity apply subject to the following: except for periods of storm runoff, the turbidity of Delta waters shall not exceed 50 NTUs in the waters of the Central Delta and 150 NTUs in other Delta waters. Exceptions to the Delta specific objectives will be considered when a dredging operation can cause an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of limits can be tolerated will be defined for the operation and prescribed in a discharge permit.

**Tulare Lake Basin**

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtmlf

Sediment
The suspended sediment load and suspended sediment discharge rate of waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Setteable Material
Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

Suspended Material
Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is equal to or between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected.

**Lahontan Regional Water Quality Control Board - Region 6**

http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/index.shtml

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the water for beneficial uses.

Setteable Materials
Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of setteable materials shall not be raised by more that 0.1 milliliter per liter.

Suspended Materials
Waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

**Colorado River Basin Regional Water Quality Control Board – Region 7**

http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/

Suspended Solids and Setteable Solids
Discharges of wastes or wastewater shall not contain suspended or setteable solids in concentrations which increase the turbidity of receiving waters, unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in turbidity does not adversely affect beneficial uses.

Sediment
The suspended sediment load and suspended sediment discharge rate to surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

**Santa Ana River Regional Water Quality Control Board – Region 8**

http://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/index.shtml

(See Chapter 4)

Solids, Suspended and Setteable
Enclosed bays and estuaries shall not contain suspended or setteable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors.

Turbidity
Increases in turbidity which result from controllable water quality factors shall comply with the following:

| Natural Turbidity | Maximum Increase |
|---|---|
| 0-50 NTU | 20% |
| 50-100 NTU | 10 NTU |
| Greater than 100 NTU | 10% |

All enclosed bay and estuaries of the region shall be free of changes in turbidity which adversely affect beneficial uses

**San Diego Regional Water Quality Control Board - Region 9**

http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/

Sediment
The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Suspended and Setteable Solids
Water shall not contain suspended and setteable solids in concentrations of solids that cause nuisance or adversely affect beneficial uses.

Turbidity
Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

Inland surface water shall not contain turbidity in excess of the numerical objectives described in Table 3-2. (This is reference to the Basin Plan; this table can be found via the weblink to the Region 9 Basin Plan).

Ground waters shall not contain turbidity in excess of the numerical objectives described in Table 3-3. (This is reference to the Basin Plan; this table can be found via the weblink to the Region 9 Basin Plan.)

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

| Natural Turbidity | Maximum Increase |
|---|---|
| 0- 50 NTU | 20% over natural turbidity level |
| 50 - 100 NTU | 10 NTU |
| Greater than 100 NTU | 10% over natural turbidity level |

In addition, within San Diego Bay, the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less that 8 feet in more than

20 percent of the readings in any zone, as measured by standard Secchi disk. Wherever the waster is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone.

**STATE WATER RESOURCES CONTROL BOARD (SWRCB)**
**ORDER NO. 99 - 08 - DWQ**
**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**
**GENERAL PERMIT NO. CAS000002**

# WASTE DISCHARGE REQUIREMENTS (WDRS) FOR DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY

The State Water Resources Control Board finds that:

1. Federal regulations for controlling pollutants in storm water runoff discharges were promulgated by the U.S. Environmental Protection Agency (USEPA) on November 16, 1990 (40 Code of Federal Regulations (CFR) Parts 122, 123, and 124). The regulations require discharges of storm water to surface waters associated with construction activity including clearing, grading, and excavation activities (except operations that result in disturbance of less than five acres of total land area and which are not part of a larger common plan of development or sale) to obtain an NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate storm water pollution.

   On December 8, 1999 federal regulations promulgated by USEPA (40CFR Parts 9, 122, 123, and 124) expanded the NPDES storm water program to include storm water discharges from municipal separate storm sewer systems (MS4s) and construction sites that were smaller than those previously included in the program. Federal regulation 40 CFR § 122.26(b)(15) defines small construction activity as including clearing, grading, and excavating that result in land disturbance of equal to or greater than one acre or less than five acres or is part of a larger common plan of development or sale. Permit applications for small construction activities are due by March 10, 2003.

2. This General Permit regulates pollutants in discharges of storm water associated with construction activity (storm water discharges) to surface waters, except from those areas on Tribal Lands; Lake Tahoe Hydrologic Unit; construction projects which disturb less than one acre, unless part of a larger common plan of development or sale; and storm water discharges which are determined ineligible for coverage under this General Permit by the California Regional Water Quality Control Boards (RWQCBs). Attachment 1 contains addresses and telephone numbers of each RWQCB office.

3. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to separate storm sewer systems or other watercourses within their jurisdiction, as allowed by State and Federal law.

4. To obtain authorization for proposed storm water discharges to surface waters, pursuant to this General Permit, the landowner (discharger) must submit a Notice of Intent (NOI) with a vicinity map and the appropriate fee to the SWRCB prior to commencement of construction activities. In addition, coverage under this General Permit shall not occur until the applicant develops a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of Section A of this permit for the project. For proposed construction activity conducted on easements or on nearby property by agreement or permission, or by an owner or lessee of a mineral estate (oil, gas, geothermal, aggregate, precious metals, and/or industrial minerals) entitled to conduct the activities, the entity responsible for the construction activity must submit the NOI and filing fee and shall be responsible for development of the SWPPP.

5. If an individual NPDES Permit is issued to a discharger otherwise subject to this General Permit or if an alternative General Permit is subsequently adopted which covers storm water discharges regulated by this General Permit, the applicability of this General Permit to such discharges is automatically terminated on the effective date of the individual permit or the date of approval for coverage under the subsequent General Permit.

6. This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with section 13389 of the California Water Code.

7. The SWRCB adopted the California Ocean Plan, and the RWQCBs have adopted and the SWRCB has approved Water Quality Control Plans (Basin Plans). Dischargers regulated by this General Permit must comply with the water quality standards in these Basin Plans and subsequent amendments thereto.

8. The SWRCB finds storm water discharges associated with construction activity to be a potential significant sources of pollutants. Furthermore, the SWRCB finds that storm water discharges associated with construction activities have the reasonable potential to cause or contribute to an excursion above water quality standards for sediment in the water bodies listed in Attachment 3 to this permit.

9. It is not feasible at this time to establish numeric effluent limitations for pollutants in storm water discharges from construction activities. Instead, the provisions of this General Permit require implementation of Best Management Practices (BMPs) to control and abate the discharge of pollutants in storm water discharges.

10. Discharges of non-storm water may be necessary for the completion of certain construction projects. Such discharges include, but are not limited to: irrigation of vegetative erosion control measures, pipe flushing and testing, street cleaning, and dewatering. Such discharges are authorized by this General Permit as long as they (a) do comply with Section A.9 of this General Permit, (b) do not cause or contribute to violation of any water quality standard, (c) do not violate any other provision of this

General Permit, (d) do not require a non-storm water permit as issued by some RWQCBs, and (e) are not prohibited by a Basin Plan. If a non-storm water discharge is subject to a separate permit adopted by a RWQCB, the discharge must additionally be authorized by the RWQCB permit.

11. Following adoption of this General Permit, the RWQCBs shall enforce the provisions herein including the monitoring and reporting requirements.

12. Following public notice in accordance with State and Federal laws and regulations, the SWRCB in a public meeting on June 8, 1998, heard and considered all comments. The SWRCB has prepared written responses to all significant comments.

13. This Order is an NPDES permit in compliance with section 402 of the Clean Water Act (CWA) and shall take effect upon adoption by the SWRCB provided the Regional Administrator of the USEPA has no objection. If the USEPA Regional Administrator objects to its issuance, the General Permit shall not become effective until such objection is withdrawn.

14. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA section 404 and does not constitute a waiver of water quality certification under CWA section 401.

15 The Monitoring Program and Reporting Requirements are modified in compliance with a judgment in the case of San Francisco BayKeeper, et al. v. State Water Resources Control Board. The modifications include sampling and analysis requirements for direct discharges of sediment to waters impaired due to sediment and for pollutants that are not visually detectable in runoff that may cause or contribute to an exceedance of water quality objectives.

16 Storm water discharges associated with industrial activity that are owned or operated by municipalities serving populations less than 100,000 people are no longer exempt from the need to apply for or obtain a storm water discharge permit. A temporary exemption, which was later extended by USEPA, was provided under section 1068(c) of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991. Federal regulation 40 CFR § 122.26(e)(1)(ii) requires the above municipalities to submit permit application by March 10, 2003.

17 This permit may be reopened and modified to include different monitoring requirements for small construction activity than for construction activity over five (5) acres.

IT IS HEREBY ORDERED that all dischargers who file an NOI indicating their intention to be regulated under the provisions of this General Permit shall comply with the following:

A. DISCHARGE PROHIBITIONS:

1. Authorization pursuant to this General Permit does not constitute an exemption to applicable discharge prohibitions prescribed in Basin Plans, as implemented by the nine RWQCBs.

2. Discharges of material other than storm water which are not otherwise authorized by an NPDES permit to a separate storm sewer system (MS4) or waters of the nation are prohibited, except as allowed in Special Provisions for Construction Activity, C.3.

3. Storm water discharges shall not cause or threaten to cause pollution, contamination, or nuisance.

4. Storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

B. RECEIVING WATER LIMITATIONS:

1. Storm water discharges and authorized nonstorm water discharges to any surface or ground water shall not adversely impact human health or the environment.

2. The SWPPP developed for the construction activity covered by this General Permit shall be designed and implemented such that storm water discharges and authorized nonstorm water discharges shall not cause or contribute to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan and/or the applicable RWQCB's Basin Plan.

3. Should it be determined by the discharger, SWRCB, or RWQCB that storm water discharges and/or authorized nonstorm water discharges are causing or contributing to an exceedance of an applicable water quality standard, the discharger shall:

   a. Implement corrective measures immediately following discovery that water quality standards were exceeded, followed by notification to the RWQCB by telephone as soon as possible but no later than 48 hours after the discharge has been discovered. This notification shall be followed by a report within 14-calender days to the appropriate RWQCB, unless otherwise directed by the RWQCB, describing (1) the nature and cause of the water quality standard exceedance; (2) the BMPs currently being implemented; (3) any additional BMPs which will be implemented to

prevent or reduce pollutants that are causing or contributing to the exceedance of water quality standards; and (4) any maintenance or repair of BMPs. This report shall include an implementation schedule for corrective actions and shall describe the actions taken to reduce the pollutants causing or contributing to the exceedance.

b. The discharger shall revise its SWPPP and monitoring program immediately after the report to the RWQCB to incorporate the additional BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring needed.

c. Nothing in this section shall prevent the appropriate RWQCB from enforcing any provisions of this General Permit while the discharger prepares and implements the above report.

C. SPECIAL PROVISIONS FOR CONSTRUCTION ACTIVITY:

1. All dischargers shall file an NOI and pay the appropriate fee for construction activities conducted at each site as required by Attachment 2: Notice of Intent--General Instructions.

2. All dischargers shall develop and implement a SWPPP in accordance with Section A: Storm Water Pollution Prevention Plan. The discharger shall implement controls to reduce pollutants in storm water discharges from their construction sites to the BAT/BCT performance standard.

3. Discharges of non-storm water are authorized only where they do not cause or contribute to a violation of any water quality standard and are controlled through implementation of appropriate BMPs for elimination or reduction of pollutants. Implementation of appropriate BMPs is a condition for authorization of non-storm water discharges. Non-storm water discharges and the BMPs appropriate for their control must be described in the SWPPP. Wherever feasible, alternatives which do not result in discharge of nonstorm water shall be implemented in accordance with Section A.9. of the SWPPP requirements.

4. All dischargers shall develop and implement a monitoring program and reporting plan in accordance with Section B: Monitoring Program and Reporting Requirements.

5. All dischargers shall comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to separate storm sewer systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs developed to comply with NPDES permits issued by the RWQCBs to local agencies.

6. All dischargers shall comply with the standard provisions and reporting requirements contained in Section C: Standard Provisions.

7. The discharger may terminate coverage for a portion of the project under this General Permit when ownership of a portion of this project has been transferred or when a phase within this multi-phase project has been completed. When ownership has transferred, the discharger must submit to its RWQCB a Change of Information Form (COI) Attachment 4 with revised site map and the name, address and telephone number of the new owner(s). Upon transfer of title, the discharger should notify the new owner(s) of the need to obtain coverage under this General Permit. The new owner must comply with provisions of Sections A. 2. (c) and
B. 2. (b) of this General Permit. To terminate coverage for a portion of the project when a phase has been completed, the discharger must submit to its RWQCB a COI with a revised map that identifies the newly delineated site.

8. The discharger may terminate coverage under this General Permit for a complete project by submitting to its RWQCB a Notice of Termination Form (NOT), and the post-construction BMPs plan according to Section A.10 of this General Permit. Note that a construction project is considered complete only when all portions of the site have been transferred to a new owner; or the following conditions have been met:

   a. There is no potential for construction related storm water pollution,

   b. All elements of the SWPPP have been completed,

   c. Construction materials and waste have been disposed of properly,

   d. The site is in compliance with all local storm water management requirements, and

   e. A post-construction storm water management plan is in place as described in the site's SWPPP.

9. This General Permit expires five years from the date of adoption.

D. REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) AUTHORITIES:

1. RWQCBs shall:

   a. Implement the provisions of this General Permit. Implementation of this General Permit may include, but is not limited to requesting the submittal of SWPPPS, reviewing SWPPPs, reviewing monitoring reports, conducting compliance inspections, and taking enforcement actions.

   b. Issue permits as they deem appropriate to individual dischargers, categories of dischargers, or dischargers in a geographic area. Upon issuance of such permits by a RWQCB, the affected dischargers shall no longer be regulated by this General Permit.

2. RWQCBs may require, on a case-by-case basis, the inclusion of an analysis of potential downstream impacts on receiving waterways due to the permitted construction.

3. RWQCBs may provide information to dischargers on the development and implementation of SWPPPs and monitoring programs and may require revisions to SWPPPs and monitoring programs.

4. RWQCBs may require dischargers to retain records for more than three years.

5. RWQCBs may require additional monitoring and reporting program requirements including sampling and analysis of discharges to water bodies listed in Attachment 3 to this permit. Additional requirements imposed by the RWQCB should be consistent with the overall monitoring effort in the receiving waters.

6. RWQCBs may issue individual NPDES permits for those construction activities found to be ineligible for coverage under this permit.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on August 19, 1999.

AYE: James M. Stubchaer
Mary Jane Forster
John W. Brown
Arthur G. Baggett, Jr.

NO: None

ABSENT: None

ABSTAIN: None

/s/
Maureen Marché
Administrative Assistant to the Board

SECTION A: STORM WATER POLLUTION PREVENTION PLAN

1. Objectives

A Storm Water Pollution Prevention Plan (SWPPP) shall be developed and implemented to address the specific circumstances for each construction site covered by this General Permit. The SWPPP shall be certified in accordance with the signatory requirements of section C, Standard Provision for Construction Activities (9). The SWPPP shall be developed and amended or revised, when necessary, to meet the following objectives:

a. Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site, and

b. Identify non-storm water discharges, and

c. Identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized nonstorm water discharges from the construction site during construction, and

d. Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

e. Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3. (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation).

f. For all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

2. Implementation Schedule

a. For construction activity commencing on or after adoption of this General Permit, the SWPPP shall be developed prior to the start of soil-disturbing activity in accordance with this Section and shall be implemented concurrently with commencement of soil-disturbing activities.

b. Existing permittees engaging in construction activities covered under the terms of the previous General Construction Permit SWPPP (WQ Order No.92-08-DWQ) shall continue to implement their existing SWPPP and shall implement any

necessary revisions to their SWPPP in accordance with this Section of the General Permit in a timely manner, but in no case more than 90-calender days from the date of adoption of this General Permit.

c. For ongoing construction activity involving a change of ownership of property, the new owner shall review the existing SWPPP and amend if necessary, or develop a new SWPPP within 45-calender days.

d. Existing permittees shall revise their SWPPP in accordance with the sampling and analysis modifications prior to August 1, 2001. For ongoing construction activity involving a change of ownership the new owner shall review the existing SWPPP and amend the sampling and analysis strategy, if required, within 45 days. For construction activity commencing after the date of adoption, the SWPPP shall be developed in accordance with the modification language adopted.

3. Availability

The SWPPP shall remain on the construction site while the site is under construction during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit.

4. Required Changes

a. The discharger shall amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, ground waters, or a municipal separate storm sewer system (MS4). The SWPPP shall also be amended if the discharger violates any condition of this General Permit or has not achieved the general objective of reducing or eliminating pollutants in storm water discharges. If the RWQCB determines that the discharger is in violation of this General Permit, the SWPPP shall be amended and implemented in a timely manner, but in no case more than 14-calendar days after notification by the RWQCB. All amendments should be dated and directly attached to the SWPPP.

b. The RWQCB or local agency with the concurrence of the RWQCB may require the discharger to amend the SWPPP.

5. Source Identification

The SWPPP shall include: (a) project information and (b) pollutant source identification combined with an itemization of those BMPs specifically chosen to control the pollutants listed.

a. Project Information

(1) The SWPPP shall include a vicinity map locating the project site with respect to easily identifiable major roadways, geographic features, or landmarks. At a minimum, the map must show the construction site perimeter, the geographic features surrounding the site, and the general topography.

(2) The SWPPP shall include a site map(s) which shows the construction project in detail, including the existing and planned paved areas and buildings.

(a) At a minimum, the map must show the construction site perimeter; existing and proposed buildings, lots, roadways, storm water collection and discharge points; general topography both before and after construction; and the anticipated discharge location(s) where the storm water from the construction site discharges to a municipal storm sewer system or other water body.

(b) The drainage patterns across the project area must clearly be shown on the map, and the map must extend as far outside the site perimeter as necessary to illustrate the relevant drainage areas. Where relevant drainage areas are too large to depict on the map, map notes or inserts illustrating the upstream drainage areas are sufficient.

(c) Temporary on-site drainages to carry concentrated flow shall be selected to comply with local ordinances, to control erosion, to return flows to their natural drainage courses, and to prevent damage to downstream properties.

3. Information presented in the SWPPP may be represented either by narrative or by graphics. Where possible, narrative descriptions should be plan notes. Narrative descriptions which do not lend themselves to plan notes can be contained in a separate document which must be referenced on the plan.

b. Pollutant Source and BMP Identification

The SWPPP shall include a description of potential sources which are likely to add pollutants to storm water discharges or which may result in nonstorm water discharges from the construction site. Discharges originating from off-site which flow across or through areas disturbed by construction that may contain pollutants should be reported to the RWQCB.

The SWPPP shall:

(1) Show drainage patterns and slopes anticipated after major grading activities are completed. Runoff from off-site areas should be prevented from flowing through areas that have been disturbed by construction unless appropriate conveyance systems are in place. The amount of anticipated storm water run-on must be considered to determine the appropriateness of the BMPs chosen. Show all calculations for anticipated storm water run-on, and describe all BMPs implemented to divert off-site drainage described in section A. 5 a. (2) (c) around or through the construction project.

(2) Show the drainage patterns into each on-site storm water inlet point or receiving water. Show or describe the BMPs that will protect operational storm water inlets or receiving waters from contaminated discharges other than sediment discharges, such as, but not limited to: storm water with elevated pH levels from contact with soil amendments such as lime or gypsum; slurry from sawcutting of concrete or asphalt ;washing of exposed aggregate concrete; concrete rinse water; building washing operations; equipment washing operations; minor street washing associated with street delineation; and/or sealing and paving activities occurring during rains.

(3) Show existing site features that, as a result of known past usage, may contribute pollutants to storm water, (e.g., toxic materials that are known to have been treated, stored, disposed, spilled, or leaked onto the construction site). Show or describe the BMPs implemented to minimize the exposure of storm water to contaminated soil or toxic materials.

(4) Show areas designated for the (a) storage of soil or waste, (b) vehicle storage and service areas, (c) construction material loading, unloading, and access areas, (d) equipment storage, cleaning, and maintenance areas.

(5) Describe the BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and construction waste. Describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage areas, or service areas. The BMPs described shall be in compliance with Federal, State, and local laws, regulations, and ordinances.

(6) Describe all post-construction BMPs for the project, and show the location of each BMP on the map. (Post-construction BMPs consist of permanent features designed to minimize pollutant discharges, including sediment, from the site after construction has been completed.) Also, describe the agency or parties to be the responsible party for long-term maintenance of these BMPs.

(7) Show the locations of direct discharge from the construction site into a Section 303(d) list water body. Show the designated sampling locations in the receiving waters, which represent the prevailing conditions of the water bodies upstream of the construction site discharge and immediately downstream from the last point of discharge.

(8) Show the locations designated for sampling the discharge from areas identified in Section A. 5. b. (2), (3), and (4) and Section A. 5. c. (1) and (2). Samples shall be taken should visual monitoring indicate that there has been a breach, malfunction, leakage, or spill from a BMP which could result in the discharge in storm water of pollutants that would not be visually detectable, or if storm water comes into contact with soil amendments or other exposed materials or contamination and is allowed to be discharged. Describe the sampling procedure, location, and rationale for obtaining the uncontaminated sample of storm water.

c. Additional Information

(1) The SWPPP shall include a narrative description of pollutant sources and BMPs that cannot be adequately communicated or identified on the site map. In addition, a narrative description of preconstruction control practices (if any) to reduce sediment and other pollutants in storm water discharges shall be included.

(2) The SWPPP shall include an inventory of all materials used and activities performed during construction that have the potential to contribute to the discharge of pollutants other than sediment in storm water. Describe the BMPs selected and the basis for their selection to eliminate or reduce these pollutants in the storm water discharges.

(3) The SWPPP shall include the following information regarding the construction site surface area: the size (in acres or square feet), the runoff coefficient before and after construction, and the percentage that is impervious (e.g., paved, roofed, etc.) before and after construction.

(4) The SWPPP shall include a copy of the NOI, and the Waste Discharge Identification (WDID) number. Should a WDID number not be received from the SWRCB at the time construction commences, the discharger shall include proof of mailing of the NOI, e.g., certified mail receipt, copy of check, express mail receipt, etc.

(5) The SWPPP shall include a construction activity schedule which describes all major activities such as mass grading, paving, lot or parcel

improvements at the site and the proposed time frame to conduct those activities.

(6) The SWPPP shall list the name and telephone number of the qualified person(s) who have been assigned responsibility for prestorm, poststorm, and storm event BMP inspections; and the qualified person(s) assigned responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

6. Erosion Control

Erosion control, also referred to as "soil stabilization" is the most effective way to retain soil and sediment on the construction site. The most efficient way to address erosion control is to preserve existing vegetation where feasible, to limit disturbance, and to stabilize and revegetate disturbed areas as soon as possible after grading or construction. Particular attention must be paid to large mass-graded sites where the potential for soil exposure to the erosive effects of rainfall and wind is great. Mass graded construction sites may be exposed for several years while the project is being built out. Thus, there is potential for significant sediment discharge from the site to surface waters.

At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season. These disturbed areas include rough graded roadways, slopes, and building pads. Until permanent vegetation is established, soil cover is the most cost-effective and expeditious method to protect soil particles from detachment and transport by rainfall. Temporary soil stabilization can be the single-most important factor in reducing erosion at construction sites. The discharger shall consider measures such as: covering with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, permanent seeding, and a variety of other measures.

The SWPPP shall include a description of the erosion control practices, including a time schedule, to be implemented during construction to minimize erosion on disturbed areas of a construction site. The discharger must consider the full range of erosion control BMPs. The discharger must consider any additional site-specific and seasonal conditions when selecting and implementing appropriate BMPs. The above listed erosion control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

a. The SWPPP shall include:

(1) An outline of the areas of vegetative soil cover or native vegetation onsite which will remain undisturbed during the construction project.

(2) An outline of all areas of soil disturbance including cut or fill areas which will be stabilized during the rainy season by temporary or permanent erosion control measures, such as seeding, mulch, or blankets, etc.

(3) An outline of the areas of soil disturbance, cut, or fill which will be left exposed during any part of the rainy season, representing areas of potential soil erosion where sediment control BMPs are required to be used during construction.

(4) A proposed schedule for the implementation of erosion control measures.

b. The SWPPP shall include a description of the BMPs and control practices to be used for both temporary and permanent erosion control measures.

c. The SWPPP shall include a description of the BMPs to reduce wind erosion at all times, with particular attention paid to stock-piled materials.

7. Stabilization

(1) All disturbed areas of the construction site must be stabilized. Final stabilization for the purposes of submitting a NOT is satisfied when:

-All soil disturbing activities are completed AND EITHER OF THE TWO FOLLOWING CRITERIA ARE MET:

-A uniform vegetative cover with 70 percent coverage has been established OR:

-equivalent stabilization measures have been employed. These measures include the use of such BMPs as blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion resistant soil coverings or treatments.

(2) Where background native vegetation covers less than 100 percent of the surface, such as in arid areas, the 70 percent coverage criteria is adjusted as follows: If the native vegetation covers 50 percent of the ground surface, 70 percent of 50 percent (.70 X .50=.35) would require 35 percent total uniform surface coverage.

8. <u>Sediment Control</u>

The SWPPP shall include a description or illustration of BMPs which will be implemented to prevent a net increase of sediment load in storm water discharge relative to preconstruction levels. Sediment control BMPs are required at appropriate locations along the site perimeter and at all operational internal inlets to the storm drain system at all times during the rainy season. Sediment control practices may include filtration devices and barriers (such as fiber rolls, silt fence, straw bale barriers, and gravel inlet filters) and/or settling devices (such as sediment traps or basins). Effective filtration devices, barriers, and settling devices shall be selected, installed and maintained properly. A proposed schedule for deployment of sediment control BMPs shall be included in the SWPPP. These are the most basic measures to prevent sediment from leaving the project site and moving into receiving waters. Limited exemptions may be authorized by the RWQCB when work on active areas precludes the use of sediment control BMPs temporarily. Under these conditions, the SWPPP must describe a plan to establish perimeter controls prior to the onset of rain.

During the nonrainy season, the discharger is responsible for ensuring that adequate sediment control materials are available to control sediment discharges at the downgrade perimeter and operational inlets in the event of a predicted storm. The discharger shall consider a full range of sediment controls, in addition to the controls listed above, such as straw bale dikes, earth dikes, brush barriers, drainage swales, check dams, subsurface drain, sandbag dikes, fiber rolls, or other controls. At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season.

If the discharger chooses to rely on sediment basins for treatment purposes, sediment basins shall, at a minimum, be designed and maintained as follows:

Option 1: Pursuant to local ordinance for sediment basin design and maintenance, provided that the design efficiency is as protective or more protective of water quality than Option 3.

OR

Option 2: Sediment basin(s), as measured from the bottom of the basin to the principal outlet, shall have at least a capacity equivalent to 3,600 cubic feet of storage per acre draining into the sediment basin. The length of the basin shall be more than twice the width of the basin. The length is determined by measuring the distance between the inlet and the outlet; and the depth must not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency.

OR

Option 3: Sediment basin(s) shall be designed using the standard equation:

$As=1.2Q/Vs$

Where: As is the minimum surface area for trapping soil particles of a certain size; Vs is the settling velocity of the design particle size chosen; and Q=C x I x A where Q is the discharge rate measured in cubic feet per second; C is the runoff coefficient; I is the precipitation intensity for the 10-year, 6-hour rain event and A is the area draining into the sediment basin in acres. The design particle size shall be the smallest soil grain size determined by wet sieve analysis, or the fine silt sized (0.01mm) particle, and the Vs used shall be 100 percent of the calculated settling velocity.

The length is determined by measuring the distance between the inlet and the outlet; the length shall be more than twice the dimension as the width; the depth shall not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency (two feet of storage, two feet of capacity). The basin(s) shall be located on the site where it can be maintained on a year-round basis and shall be maintained on a schedule to retain the two feet of capacity;

OR

Option 4: The use of an equivalent surface area design or equation, provided that the design efficiency is as protective or more protective of water quality than Option 3.

A sediment basin shall have a means for dewatering within 7-calendar days following a storm event. Sediment basins may be fenced if safety (worker or public) is a concern.

The outflow from a sediment basin that discharges into a natural drainage shall be provided with outlet protection to prevent erosion and scour of the embankment and channel.

The discharger must consider any additional site-specific and seasonal conditions when selecting and designing sediment control BMPs. The above listed sediment control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

The SWPPP shall include a description of the BMPs to reduce the tracking of sediment onto public or private roads at all times. These public and private roads shall be inspected and cleaned as necessary. Road cleaning BMPs shall be discussed in the SWPPP and will not rely on the washing of accumulated sediment or silt into the storm drain system.

9. Non-Storm Water Management

Describe all non-storm water discharges to receiving waters that are proposed for the construction project. Non-storm water discharges should be eliminated or reduced to the extent feasible. Include the locations of such discharges and descriptions of all BMPs designed for the control of pollutants in such discharges. Onetime discharges shall be monitored during the time that such discharges are occurring. A qualified person should be assigned the responsibility for ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems (consistent with BAT/BCT), and the name and contact number of that person should be included in the SWPPP document.

Discharging sediment-laden water which will cause or contribute to an exceedance of the applicable RWQCB's Basin Plan from a dewatering site or sediment basin into any receiving water or storm drain without filtration or equivalent treatment is prohibited.

10. Post-Construction Storm Water Management

The SWPPP shall include descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases have been completed at the site (Post-Construction BMPs). Post-Construction BMPs include the minimization of land disturbance, the minimization of impervious surfaces, treatment of storm water runoff using infiltration, detention/retention, biofilter BMPs, use of efficient irrigation systems, ensuring that interior drains are not connected to a storm sewer system, and appropriately designed and constructed energy dissipation devices. These must be consistent with all local post-construction storm water management requirements, policies, and guidelines. The discharger must consider site-specific and seasonal conditions when designing the control practices. Operation and maintenance of control practices after construction is completed shall be addressed, including short-and long-term funding sources and the responsible party.

11. Maintenance, Inspection, and Repair

The SWPPP shall include a discussion of the program to inspect and maintain all BMPs as identified in the site plan or other narrative documents throughout the entire duration of the project. A qualified person will be assigned the responsibility to conduct inspections. The name and telephone number of that person shall be listed in the SWPPP document. Inspections will be performed before and after storm events and once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or design changes as soon as feasible depending upon field conditions. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible after the conclusion of each storm depending upon worker safety.

For each inspection required above, the discharger shall complete an inspection checklist. At a minimum, an inspection checklist shall include:

a. Inspection date.

b. Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches).

c. A description of any inadequate BMPs.

d. If it is possible to safely access during inclement weather, list observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.

e. Corrective actions required, including any changes to SWPPP necessary and implementation dates.

f. Inspectors name, title, and signature.

The dischargers shall prepare their inspection checklists using the inspection checklist form provided by the SWRCB or RWQCB or on forms that contain the equivalent information.

12. Training

Individuals responsible for SWPPP preparation, implementation, and permit compliance shall be appropriately trained, and the SWPPP shall document all training. This includes those personnel responsible for installation, inspection, maintenance, and repair of BMPs. Those responsible for overseeing, revising, and amending the SWPPP shall also document their training. Training should be both formal and informal, occur on an ongoing basis when it is appropriate and convenient, and should include training/workshops offered by the SWRCB, RWQCB, or other locally recognized agencies or professional organizations.

13. List of Contractors/Subcontractors

The SWPPP shall include a list of names of all contractors, (or subcontractors) and individuals responsible for implementation of the SWPPP. This list should include telephone numbers and addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers should also be included.

14. Other Plans

This SWPPP may incorporate by reference the appropriate elements of other plans required by local, State, or Federal agencies. A copy of any requirements incorporated by reference shall be kept at the construction site.

15. Public Access

The SWPPP shall be provided, upon request, to the RWQCB. The SWPPP is considered a report that shall be available to the public by the RWQCB under section 308(b) of the Clean Water Act.

16. Preparer Certification

The SWPPP and each amendment shall be signed by the landowner (discharger) or his representative and include the date of initial preparation and the date of each amendment.

SECTION B: MONITORING PROGRAM AND REPORTING REQUIREMENTS

1. Required Changes

The RWQCB may require the discharger to conduct additional site inspections, to submit reports and certifications, or perform sampling and analysis.

2. Implementation

a. The requirements of this Section shall be implemented at the time of commencement of construction activity (see also Section A. 2. Implementation Schedule). The discharger is responsible for implementing these requirements until construction activity is complete and the site is stabilized.

b. For ongoing construction activity involving a change in ownership of property covered by this General Permit, the new owner must complete a NOI and implement the requirements of this Section concurrent with the change of ownership. For changes of information, the owner must follow instructions in C. 7. Special Provisions for Construction Activity of the General Permit.

3. Site Inspections

Qualified personnel shall conduct inspections of the construction site prior to anticipated storm events, during extended storm events, and after actual storm events to identify areas contributing to a discharge of storm water associated with construction activity. The name(s) and contact number(s) of the assigned inspection personnel shall be listed in the SWPPP. Pre-storm inspections are to ensure that BMPs are properly installed and maintained; post-storm inspections are to assure that the BMPs have functioned adequately. During extended storm events, inspections shall be required each 24-hour period. Best Management Practices (BMPs) shall be evaluated for adequacy and proper implementation and whether additional BMPs are required in accordance with the terms of the General Permit (see language in Section A. 11. Maintenance, Inspection, and Repair). Implementation of nonstorm water discharge BMPs shall be verified and their

effectiveness evaluated. One time discharges of non-storm water shall be inspected when such discharges occur.

4. Compliance Certification

Each discharger or qualified assigned personnel listed by name and contact number in the SWPPP must certify annually that construction activities are in compliance with the requirements of this General Permit and the SWPPP. This Certification shall be based upon the site inspections required in Item 3 of this Section. The certification must be completed by July 1 of each year.

5. Noncompliance Reporting

Dischargers who cannot certify compliance, in accordance with Item 4 of this Section and/or who have had other instances of noncompliance excluding exceedances of water quality standards as defined in section B. 3. Receiving Water Limitations Language, shall notify the appropriate RWQCB within 30 days. Corrective measures should be implemented immediately following discovery that water quality standards were exceeded. The notifications shall identify the noncompliance event, including an initial assessment of any impact caused by the event; describe the actions necessary to achieve compliance; and include a time schedule subject to the modifications by the RWQCB indicating when compliance will be achieved. Noncompliance notifications must be submitted within 30-calendar days of identification of noncompliance.

6. Monitoring Records

Records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated. With the exception of noncompliance reporting, dischargers are not required to submit these records.

7. Monitoring Program for Sedimentation/Siltation

Dischargers of storm water associated with construction activity that directly enters a water body listed in Attachment 3 shall conduct a sampling and analysis program for the pollutants (sedimentation/siltation or turbidity) causing the impairment. The discharger shall monitor for the applicable parameter. If the water body is listed for sedimentation or siltation, samples should be analyzed for Settleable Solids (ml/l) and Total Suspended Solids (mg/l ). Alternatively or in addition, samples may be analyzed for suspended sediment concentration according to ASTM D3977-97. If the water body is listed for turbidity, samples should be analyzed for turbidity (NTU). Discharges that flow through tributaries that are not listed in Attachment 3 or that flow into Municipal Separate Storm Sewer Systems (MS4) are not subject to these sampling and analysis requirements. The sampling and analysis parameters and procedures must be designed to determine whether the BMPs installed and maintained prevent discharges of sediment from contributing to impairment in receiving waters.

Samples shall be collected during the first two hours of discharge from rain events which result in a direct discharge to any water body listed in Attachment 3. Samples shall be collected during daylight hours (sunrise to sunset). Dischargers need not collect more than four (4) samples per month. All samples shall be taken in the receiving waters and shall be representative of the prevailing conditions of the water bodies. Samples shall be collected from safely accessible locations upstream of the construction site discharge and immediately downstream from the last point of discharge.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or laboratory analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a Notice of Termination has been submitted and approved.

8. Monitoring Program for Pollutants Not Visually Detectable in Storm Water

A sampling and analysis program shall be developed and conducted for pollutants which are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives in the receiving water. Pollutants that should be considered for inclusion in this sampling and analysis program are those identified in Sections A.5.b. and A.5.c.

Construction materials and compounds that are not stored in water-tight containers under a water-tight roof or inside a building are examples of materials for which the discharger may have to implement sampling and analysis procedures. The goal of the sampling and analysis is to determine whether the BMPs employed and maintained on site are effective in preventing the potential pollutants from coming in contact with storm water and causing or contributing to an exceedance of water quality objectives in the receiving waters. Examples of construction sites that may require sampling and analysis include: sites that are known to have contaminants spilled or spread on the ground; sites where construction practices include the application of soil amendments, such as gypsum, which can increase the pH of the runoff; or sites having uncovered stockpiles of material exposed to storm water. Visual observations before, during, and after storm events may trigger the requirement to collect samples. Any breach, malfunction, leakage, or spill observed which could result in the discharge of pollutants to surface waters that *would* not be visually detectable in storm water shall trigger the collection of a sample of discharge. Samples shall be collected at all discharge locations which drain the areas identified by the visual observations and which can be safely accessed. For sites where sampling and analysis is required, personnel trained in water quality sampling procedures shall collect storm water samples. A sufficiently large sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site

(uncontaminated sample) shall be collected for comparison with the discharge sample. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.

The uncontaminated sample shall be compared to the samples of discharge using field analysis or through laboratory analysis. Analyses may include, but are not limited to, indicator parameters such as: pH, specific conductance, dissolved oxygen, conductivity, salinity, and TDS.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a *Notice of* Termination has been submitted and approved.

## SECTION C: STANDARD PROVISIONS FOR CONSTRUCTION ACTIVITY

1. Duty to Comply

The discharger must comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

2. General Permit Actions

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

4. Duty to Mitigate

The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance

The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit and with the requirements of Storm Water Pollution Prevention Plans (SWPPP). Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

6. Property Rights

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

7. Duty to Provide Information

The discharger shall furnish the RWQCB, State Water Resources Control Board, or USEPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records required to be kept by this General Permit.

8. Inspection and Entry

The discharger shall allow the RWQCB, SWRCB, USEPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

b. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

c. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

d. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

9. Signatory Requirements

a. All Notice of Intents (NOIs), Notice of Terminations (NOTs), SWPPPs, certifications, and reports prepared in accordance with this Order submitted to the SWRCB shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of the construction activity if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer, ranking elected official, or duly authorized representative. The principal executive officer of a Federal agency includes the chief executive officer of the agency or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of USEPA).

b. All SWPPPs, reports, certifications, or other information required by the General Permit and/or requested by the RWQCB, SWRCB, USEPA, or the local storm water management agency shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative if:

(1) The authorization is made in writing by a person described above and retained as part of the SWPPP; or

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the construction activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization must be attached to the SWPPP prior to submittal of any reports, information, or certifications to be signed by the authorized representative.

10. Certification

Any person signing documents under Section C, Provision 9 above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. Anticipated Noncompliance

The discharger will give advance notice to the RWQCB and local storm water management agency of any planned changes in the construction activity which may result in noncompliance with General Permit requirements.

12. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

13. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

14. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

15. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

16. Penalties for Violations of Permit Conditions

a. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $27,500 per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

b. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties which in some cases are greater than those under the CWA.

17. Availability

A copy of this General Permit shall be maintained at the construction site during construction activity and be available to operating personnel.

18. Transfers

This General Permit is not transferable. A new owner of an ongoing construction activity must submit a NOI in accordance with the requirements of this General Permit to be authorized to discharge under this General Permit. An owner who sells property covered

by this General Permit shall inform the new owner of the duty to file a NOI and shall provide the new owner with a copy of this General Permit.

19. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

Attachment 1

# SWRCB AND RWQCB CONTACT LIST

Division of Water Quality
P.O. Box 1977
Sacramento, CA 95812-1977
(916) 341-5537 FAX: (916) 341-5543
Web Page: http://www.waterboards.ca.gov/water_issues/programs/stormwater/
Email: stormwater@waterboards.ca.gov

## CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS

NORTH COAST REGION (1)
5550 Skylane Blvd, Ste. A
Santa Rose, CA 95403
(707) 576-2220 FAX: (707)523-0135
http://www.waterboards.ca.gov/rwqcb1

SAN FRANCISCO BAY REGION (2)
1515 Clay Street, Ste. 1400
Oakland, CA 94612
(510) 622-2300 FAX: (510) 622-2640
http://www.waterboards.ca.gov/rwqcb2

CENTRAL COAST REGION (3)
895 Aerovista Place, Ste 101
San Luis Obispo, CA 93401
(805) 549-3147 FAX: (805) 543-0397
http://www.waterboards.ca.gov/rwqcb3

LOS ANGELES REGION (4)
320 W. 4th Street, Ste. 200
Los Angeles, CA 90013
(213) 576-6600 FAX: (213) 576-6640
http://www.waterboards.ca.gov/rwqcb4

CENTRAL VALLEY REGION (5S)
11020 Sun Center Dr., #200
Rancho Cordova, CA 95670-6114
(916) 464-3291 FAX: (916) 464-4645
http:www.waterboards.ca.gov/rwqcb5

FRESNO BRANCH OFFICE (5F)
1685 E St.
Fresno, CA 93706
(559) 445-5116 FAX: (559) 445-5910
http://www.waterboards.ca.gov/rwqcb5

REDDING BRANCH OFFICE (5R)
415 Knollcrest Drive, Ste. 100
Redding, CA 96002
(530) 224-4845 FAX: (530) 224-4857
http://www.waterboards.ca.gov/rwqcb5

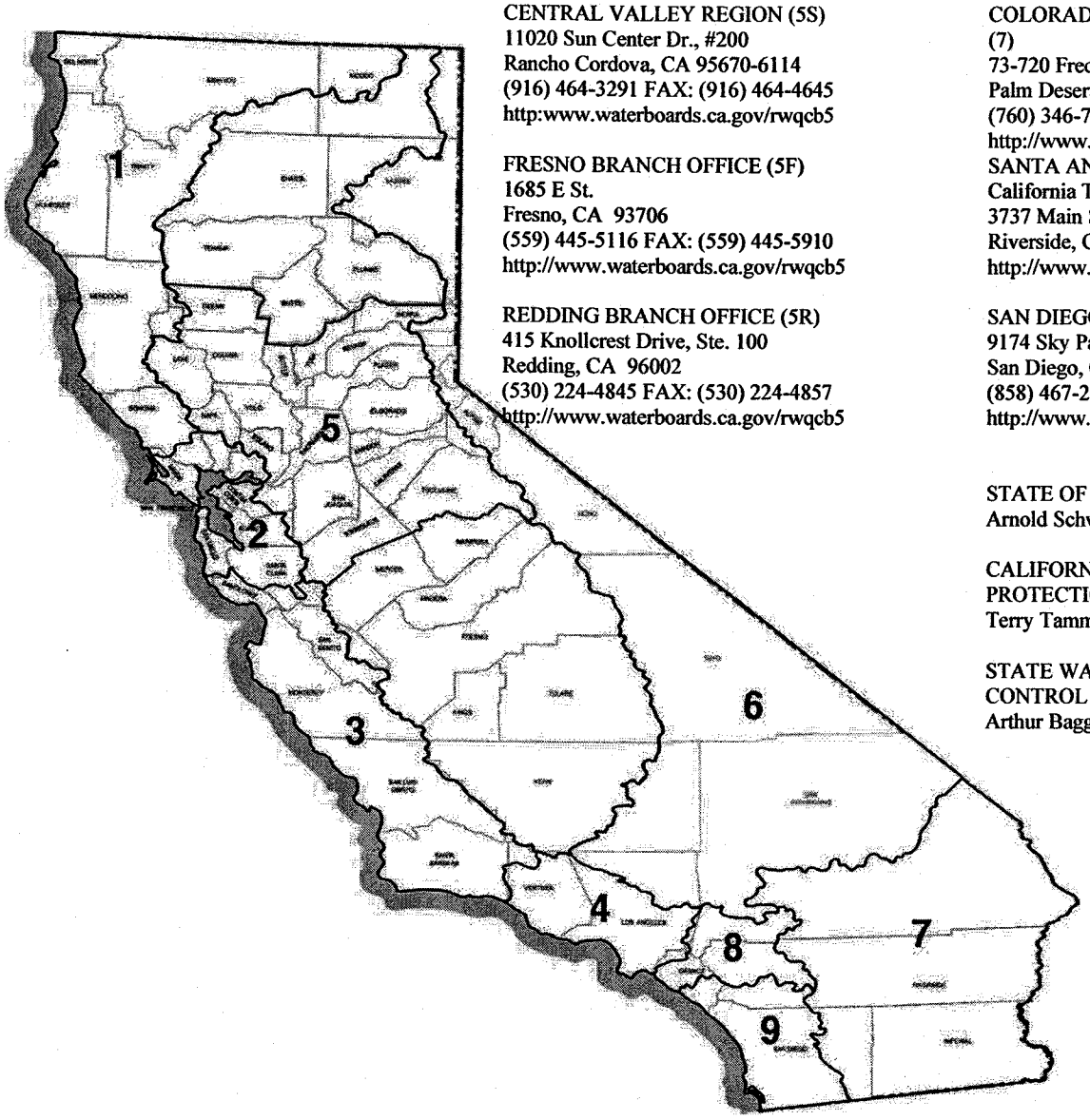
LAHONTAN REGION (6 SLT)
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150
(530) 542-5400 FAX: (530) 544-2271
http://www.waterboards.ca.gov/rwqcb6

VICTORVILLE OFFICE (6V)
15428 Civic Drive, Ste. 100
Victorville, CA 92392-2383
(760) 241-6583 FAX: (760) 241-7308
http://www.waterboards.ca.gov/rwqcb6

COLORADO RIVER BASIN REGION (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491 FAX: (760) 341-6820
http://www.waterboards.ca.gov/rwqcb7

SANTA ANA REGION (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
http://www.waterboards.ca.gov/rwqcb8

SAN DIEGO REGION (9)
9174 Sky Park Court, Ste. 100
San Diego, CA 92123-4340
(858) 467-2952 FAX: (858) 571-6972
http://www.waterboards.ca.gov/rwqcb9




STATE OF CALIFORNIA
Arnold Schwarzenegger, Governor

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Terry Tamminen, Secretary

STATE WATER RESOURCES CONTROL BOARD
Arthur Baggett Jr., Chairman

# NOTICE OF INTENT (NOI) TO COMPLY WITH THE TERMS OF THE GENERAL PERMIT TO DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

## GENERAL INSTRUCTIONS

### Who Must Submit

Discharges of storm water associated with construction that results in the disturbance of one acre or more of land must apply for coverage under the General Construction Activities Storm Water Permit (General Permit). Construction activity which is a part of a larger common area of development or sale must also be permitted. (For example, if 4 acres of a 20-acre subdivision is disturbed by construction activities, and the remaining 16 acres is to be developed at a future date, the property owner must obtain a General Storm Water Permit for the 4-acre project). Construction activity includes, but is not limited to: clearing, grading, demolition, excavation, construction of new structures, and reconstruction of existing facilities involving removal and replacement that results in soil disturbance. This includes construction access roads, staging areas, storage areas, stockpiles, and any off-site areas which receive run-off from the construction project such as discharge points into a receiving water. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

The owner of the land where the construction activity is occurring is responsible for obtaining a permit. Owners may obtain coverage under the General Permit by filing a NOI in accordance with the following instructions. Coverage for construction activity conducted on easements (e.g., pipeline construction) or on nearby properties by agreement or permission, or by an owner or lessee of a mineral estate (oil, gas, geothermal, aggregate, precious metals, and/or industrial minerals) entitled to conduct the activities, shall be obtained by the entity responsible for the construction activity. Linear construction projects which will have construction activity occurring in one or more than one Region should contact the State Water Resources Control Board at the number listed below prior to submitting an NOI application for specific information related to the use of the NOI form.

### Construction Activity Not Covered By This General Permit

Storm water discharges in the Lake Tahoe Hydrologic Unit will be regulated by a separate permit(s) adopted by the California Regional Water Quality Control Board, Lahontan Region, and will not be covered under the State Water Resources Control Board's (SWRCB) General Permit. Storm water discharges on Indian Lands will be regulated by the U.S. Environmental Protection Agency.

Where to Apply

The NOI form, vicinity map, and appropriate fee must be mailed to the SWRCB at the following address:

State Water Resources Control Board
Division of Water Quality
Attn: Storm Water Permit Unit
P.O. Box 1977
Sacramento, CA 95812-1977

When to Apply

Property owners proposing to conduct construction activities subject to this General Permit must file a Notice of Intent prior to the commencement of construction activity.

Fees

The total annual fee is the current base fee plus applicable surcharges for all construction sites submitting an NOI. Checks should be made payable to: SWRCB.

Completing the Notice of Intent (NOI)

The submittal to obtain coverage under the General Permit must include a completed NOI Form (Notice of Intent, attached), a vicinity map, and the appropriate annual fee. The NOI must be completely and accurately filled out; the vicinity map and annual fee must be included with the NOI or the submittal is considered incomplete and will be rejected. A construction site is considered to be covered by the General Permit upon filing a complete NOI submittal, and implementation of a defensible Storm Water Pollution Prevention Plan (SWPPP). Upon receipt of a complete NOI submittal, each discharger will be sent a receipt letter containing the waste discharger's identification (WDID) number.

Questions?

If you have any questions on completing the NOI please call the SWRCB at (916) 341-5537.

# NOI-LINE-BY-LINE INSTRUCTIONS

Please type or print when completing the NOI Form and vicinity map.

## SECTION I--NOI STATUS

Mark one of the two boxes at the top portion of the NOI. Check box 1 if the NOI is being completed for new construction. Check box 2 if the NOI is being submitted to report changes for a construction site already covered by the General Permit. An example of a change that warrants a resubmittal of the NOI is a change of total area of the construction site. The permit is non-transferable, a change of ownership requires a Notice of Termination (NOT) submittal and a new NOI. Complete only those portions of the NOI that apply to the changes (the NOI must always be signed). If box 2 is checked, the WDID number must be included.

## SECTION II--PROPERTY OWNER

Enter the construction site owner's official or legal name and address; contact person (if other than owner), title, and telephone number.

## SECTION III--DEVELOPER / CONTRACTOR INFORMATION

Enter the name of the developer's (or general contractor's) official or legal name, address, contact person, title, and telephone number. The contact person should be someone who is familiar with the construction site and is responsible for compliance and oversight of the general permit.

## SECTION IV-CONSTRUCTION PROJECT INFORMATION

Enter the project name, site address, county, city, (or nearest city if construction is occurring in an unincorporated area), zip code, and telephone number (if any) of the construction site. Include an emergency contact telephone or pager number. Construction site information should include latitude and longitude designations, tract numbers, and/or mile post markers, if applicable. The site contact person should be someone who is familiar with the project, site plans, SWPPP, and monitoring program. All NOIs must be accompanied by a vicinity map.

Part A: Enter the total size in acres of all areas associated with construction activity, including all access roads.

Part B: Enter the total size in acres of the area to be disturbed by construction activity and the percentage of the area listed in Part A above that this represents.

Part C: Enter the percentage of the site that is impervious (areas where water cannot soak into the ground, such as concrete, asphalt, rooftops, etc.) before and after construction.

Part D: Include tract numbers, if available.

Part E: Enter the mile post marker number at the project site location.

Part F: Indicate whether the construction site is part of a larger common plan of development or sale. For example, if the construction activity is occurring on a two-acre site which is within a development that is one acre or greater, answer yes.

Part G: Enter the name of the development (e.g. "Quail Ridge Subdivision", "Orange Valley Estates", etc.).

Part H: Indicate when construction will begin (month, day, year). When a NOI is being submitted due to a change in ownership, the commencement date should be the date the new ownership took effect.

Part I: Indicate the percentage of the total project area to be mass graded.

Part J: Enter the estimated completion dates for the mass grading activities and for the project completion.

Part K: Indicate the type(s) of construction taking place. For example, "Transportation" should be checked for the construction of roads; "Utility" should be checked for installation of sewer, electric, or telephone systems. Include a description of the major construction activities, (e.g., 20 single family homes, a supermarket, an office building, a factory, etc.)

SECTION V--BILLING ADDRESS

To continue coverage under the General Permit, the annual fee must be paid. Indicate where the annual fee invoice should be mailed by checking one of the following boxes:

Owner: sent to the owners address as it appears in Section II.

Developer/Contractor: sent to the developer's address as it appears in Section III.

Other: sent to a different address and enter that address in the spaces provided.

SECTION VI--REGULATORY STATUS

Indicate whether or not the site is subject to local erosion/sediment control ordinances. Indicate whether the erosion/sediment control plan designed to comply with the ordinance addresses the construction of infrastructure and structures in addition to grading. Identify the name and telephone number of the local agency, if applicable.

SECTION VII--RECEIVING WATER INFORMATION

Part A: Indicate whether the storm water runoff from the construction site discharges indirectly to waters of the United States, directly to waters of the United States, or to a separate storm drain system.

Indirect discharges include discharges that may flow overland across adjacent properties or rights-of-way prior to discharging into waters of the United States.

Enter the name of the owner/operator of the relevant storm drain system, if applicable. Storm water discharges directly to waters of the United States will typically have an outfall structure directly from the facility to a river, lake, creek, stream, bay, ocean, etc. Discharges to separate storm sewer systems are those that discharge to a collection system operated by municipalities, flood control districts, utilities, or similar entities.

Part B: Enter the name of the receiving water. Regardless of point of discharge, the owner must determine the receiving water for the construction site's storm water discharge. Enter the name of the receiving water.

SECTION VIII--IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

Part A: Indicate the status of the SWPPP, date prepared, or availability for review. Also indicate if a tentative construction schedule has been included in the SWPPP (the inclusion of a construction activity schedule is a mandatory SWPPP requirement).

Part B: Provide information concerning the status of the development of a monitoring program, a component of the SWPPP which outlines an inspection and maintenance schedule for the proposed Best Management Practices (BMPs). Provide name and phone number of program preparer.

Part C: Provide the name and phone numbers of the responsible party or parties designated to insure compliance with all elements of the General Permit and SWPPP.

SECTION IX--VICINITY MAP AND FEE

Provide a “to scale” or "to approximate scale" drawing of the construction site and the immediate surrounding area. Whenever possible, limit the map to an 8.5” x 11’ or 11" x 17" sheet of paper. At a minimum, the map must show the site perimeter, the geographic features surrounding the site, and general topography, and a north arrow. The map must also include the location of the construction project in relation to named streets, roads, intersections, or landmarks. A NOI containing a map which does not clearly indicate the location of the construction project will be rejected. Do not submit blueprints unless they meet the above referenced size limits.

SECTION X--CERTIFICATIONS

This section must be completed by the owner or signatory agent of the construction site*. The certification provides assurances that the NOI and vicinity map were completed in an accurate and complete fashion and with the knowledge that penalties exist for providing false information. Certification also requires the owner to comply with the provisions in the General Permit.

* For a corporation: a responsible corporate officer (or authorized individual). For a partnership or sole proprietorship: a general partner or the proprietor, respectively. For a municipality, State, Federal, or other public agency: either a principal executive officer, ranking elected official, or duly authorized representative.

Attachment 2

State Water Resources Control Board

# NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ ORDER No. 99-08-DWQ)

## I. NOI STATUS (SEE INSTRUCTIONS)

MARK ONLY ONE ITEM 1. ☐ New Construction 2. ☐ Change of Information for WDID#

## II. PROPERTY OWNER

| Name | Contact Person | | |
|---|---|---|---|
| Mailing Address | Title | | |
| City | State | Zip | Phone |

Owner Type (*check one*) 1.[ ] Private Individual 2.[ ]Business 3.[ ]Municipal 4.[ ]State 5.[ ]Federal 6.[ ]Other

## III. DEVELOPER/CONTRACTOR INFORMATION

| Developer/Contractor | Contact Person | | |
|---|---|---|---|
| Mailing Address | Title | | |
| City | State | Zip | Phone |

## IV. CONSTRUCTION PROJECT INFORMATION

| Site/Project Name | Site Contact Person | | |
|---|---|---|---|
| Physical Address/Location | Latitude ____° | Longitude ____° | County |
| City (or nearest City) | Zip | Site Phone Number | Emergency Phone Number |

A. Total size of construction site area: _____ Acres

B. Total area to be disturbed: _____ Acres (% of total _____)

C. Percent of site imperviousness (including rooftops):
Before Construction: _____%
After Construction: _____%

D. Tract Number(s): _____, _____

E. Mile Post Marker: _____

F. Is the construction site part of a larger common plan of development or sale?
☐ YES ☐ NO

G. Name of plan or development:

H. Construction commencement date: ____/____/____

I. % of site to be mass graded: _____

J. Projected construction dates:
Complete grading: ____/____/____ Complete project: ____/____/____

K. Type of Construction (Check all that apply):
1. ☐ Residential 2. ☐ Commercial 3. ☐ Industrial 4. ☐ Reconstruction 5. ☐ Transportation
6. ☐ Utility Description: _____ 7. ☐ Other (Please List): _____

## V. BILLING INFORMATION

| SEND BILL TO: | Name | Contact Person | |
|---|---|---|---|
| ☐ OWNER (as in II. above) | | | |
| ☐ DEVELOPER (as in III. above) | Mailing Address | Phone/Fax | |
| ☐ OTHER (enter information at right) | City | State | Zip |

## VI. REGULATORY STATUS

A. Has a local agency approved a required erosion/sediment control plan? ☐ YES ☐ NO

Does the erosion/sediment control plan address construction activities such as infrastructure and structures? ☐ YES ☐ NO

Name of local agency: _____ Phone: _____

B. Is this project or any part thereof, subject to conditions imposed under a CWA Section 404 permit of 401 Water Quality Certification? ☐ YES ☐ No

If yes, provide details: _____

## VII. RECEIVING WATER INFORMATION

A. Does the storm water runoff from the construction site discharge to (Check all that apply):

1. ☐ **Indirectly to waters of the U.S.**
2. ☐ **Storm drain system - Enter owner's name:** _____
3. ☐ **Directly to waters of U.S. (e.g. , river, lake, creek, stream, bay, ocean, etc.)**

B. Name of receiving water: (river, lake, creek, stream, bay, ocean): _____

## VIII. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (check one)

☐ A SWPPP has been prepared for this facility and is available for review: Date Prepared: ____/____/____ Date Amended: ____/____/____

☐ A SWPPP will be prepared and ready for review by (enter date): ____/____/____

☐ A tentative schedule has been included in the SWPPP for activities such as grading, street construction, home construction, etc.

B. MONITORING PROGRAM

☐ A monitoring and maintenance schedule has been developed that includes inspection of the construction BMPs before anticipated storm events and after actual storm events and is available for review.

If checked above: A qualified person has been assigned responsibility for pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes. ☐ YES ☐ NO

Name: _____ Phone: _____

C. PERMIT COMPLIANCE RESPONSIBILITY

A qualified person has been assigned responsibility to ensure full compliance with the Permit, and to implement all elements of the Storm Water Pollution Prevention Plan including:

1. Preparing an annual compliance evaluation. ☐ YES ☐ NO

Name: _____ Phone: _____

2. Eliminating all unauthorized discharges. ☐ YES ☐ NO

## IX. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal? ☐ YES ☐ NO

Have you included payment of the annual fee with this submittal? ☐ YES ☐ NO

## X. CERTIFICATIONS

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with."

**Printed Name:** _____

**Signature:** _____ **Date:** _____

**Title:** _____

ATTACHMENT 3

## 303d Listed Water Bodies for Sedimentation

| REGION | WATER BODY NAME | CODE | POLLUTANT |
|---|---|---|---|
| 1 | MATTOLE RIVER | 1100 | Sedimentation/Siltation |
| 1 | TRINITY RIVER, SOUTH FORK | 1100 | Sedimentation/Siltation |
| 1 | REDWOOD CREEK | 1100 | Sedimentation/Siltation |
| 1 | MAD RIVER | 1100 | Sedimentation/Siltation |
| 1 | ELK RIVER | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER, SOUTH FORK | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER, NORTH FORK | 1100 | Sedimentation/Siltation |
| 1 | TRINITY RIVER | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER, MIDDLE FORK | 1100 | Sedimentation/Siltation |
| 1 | MAD RIVER | 2500 | Turbidity |
| 1 | TEN MILE RIVER | 1100 | Sedimentation/Siltation |
| 1 | NOYO RIVER | 1100 | Sedimentation/Siltation |
| 1 | BIG RIVER | 1100 | Sedimentation/Siltation |
| 1 | ALBION RIVER | 1100 | Sedimentation/Siltation |
| 1 | NAVARRO RIVER | 1100 | Sedimentation/Siltation |
| 1 | GARCIA RIVER | 1100 | Sedimentation/Siltation |
| 1 | GUALALA RIVER | 1100 | Sedimentation/Siltation |
| 1 | RUSSIAN RIVER | 1100 | Sedimentation/Siltation |
| 1 | TOMKI CREEK | 1100 | Sedimentation/Siltation |
| 1 | VAN DUZEN RIVER | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER DELTA | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER, MIDDLE MAIN FORK | 1100 | Sedimentation/Siltation |
| 1 | ESTERO AMERICANO | 1100 | Sedimentation/Siltation |
| 1 | NAVARRO RIVER DELTA | 1100 | Sedimentation/Siltation |
| 1 | EEL RIVER, UPPER MAIN FORK | 1100 | Sedimentation/Siltation |
| 1 | FRESHWATER CREEK | 1100 | Sedimentation/Siltation |
| 1 | SCOTT RIVER | 1100 | Sedimentation/Siltation |
| 2 | TOMALES BAY | 1100 | Sedimentation/Siltation |
| 2 | NAPA RIVER | 1100 | Sedimentation/Siltation |
| 2 | SONOMA CREEK | 1100 | Sedimentation/Siltation |
| 2 | PETALUMA RIVER | 1100 | Sedimentation/Siltation |
| 2 | LAGUNITAS CREEK | 1100 | Sedimentation/Siltation |
| 2 | WALKER CREEK | 1100 | Sedimentation/Siltation |
| 2 | SAN GREGORIO CREEK | 1100 | Sedimentation/Siltation |

| | | | |
|---|---|---|---|
| 2 | SAN FRANCISQUITO CREEK | 1100 | Sedimentation/Siltation |
| 2 | PESCADERO CREEK (REG 2) | 1100 | Sedimentation/Siltation |
| 2 | BUTANO CREEK | 1100 | Sedimentation/Siltation |
| 3 | MORRO BAY | 1100 | Sedimentation/Siltation |
| 3 | SAN LORENZO RIVER ESTUARY | 1100 | Sedimentation/Siltation |
| 3 | SHINGLE MILL CREEK | 1100 | Sedimentation/Siltation |
| 3 | MOSS LANDING HARBOR | 1100 | Sedimentation/Siltation |
| 3 | WATSONVILLE SLOUGH | 1100 | Sedimentation/Siltation |
| 3 | SAN LORENZO RIVER | 1100 | Sedimentation/Siltation |
| 3 | ELKHORN SLOUGH | 1100 | Sedimentation/Siltation |
| 3 | SALINAS RIVER LAGOON (NORTH) | 1100 | Sedimentation/Siltation |
| 3 | GOLETA SLOUGH/ESTUARY | 1100 | Sedimentation/Siltation |
| 3 | CARPINTERIA MARSH (EL ESTERO MARSH) | 1100 | Sedimentation/Siltation |
| 3 | LOMPICO CREEK | 1100 | Sedimentation/Siltation |
| 3 | MORO COJO SLOUGH | 1100 | Sedimentation/Siltation |
| 3 | VALENCIA CREEK | 1100 | Sedimentation/Siltation |
| 3 | PAJARO RIVER | 1100 | Sedimentation/Siltation |
| 3 | RIDER GULCH CREEK | 1100 | Sedimentation/Siltation |
| 3 | LLAGAS CREEK | 1100 | Sedimentation/Siltation |
| 3 | SAN BENITO RIVER | 1100 | Sedimentation/Siltation |
| 3 | SALINAS RIVER | 1100 | Sedimentation/Siltation |
| 3 | CHORRO CREEK | 1100 | Sedimentation/Siltation |
| 3 | LOS OSOS CREEK | 1100 | Sedimentation/Siltation |
| 3 | SANTA YNEZ RIVER | 1100 | Sedimentation/Siltation |
| 3 | SAN ANTONIO CREEK (SANTA BARBARA COUNTY) | 1100 | Sedimentation/Siltation |
| 3 | CARBONERA CREEK | 1100 | Sedimentation/Siltation |
| 3 | SOQUEL LAGOON | 1100 | Sedimentation/Siltation |
| 3 | APTOS CREEK | 1100 | Sedimentation/Siltation |
| 4 | MUGU LAGOON | 1100 | Sedimentation/Siltation |
| 5 | HUMBUG CREEK | 1100 | Sedimentation/Siltation |
| 5 | PANOCHE CREEK | 1100 | Sedimentation/Siltation |
| 5 | FALL RIVER (PIT) | 1100 | Sedimentation/Siltation |
| 6 | BEAR CREEK (R6) | 1100 | Sedimentation/Siltation |
| 6 | MILL CREEK (3) | 1100 | Sedimentation/Siltation |
| 6 | HORSESHOE LAKE (2) | 1100 | Sedimentation/Siltation |
| 6 | BRIDGEPORT RES | 1100 | Sedimentation/Siltation |
| 6 | TOPAZ LAKE | 1100 | Sedimentation/Siltation |
| 6 | LAKE TAHOE | 1100 | Sedimentation/Siltation |

| | | | |
|---|---|---|---|
| 6 | PINE CREEK (2) | 1100 | Sedimentation/Siltation |
| 6 | TRUCKEE RIVER | 1100 | Sedimentation/Siltation |
| 6 | CLEARWATER CREEK | 1100 | Sedimentation/Siltation |
| 6 | GRAY CREEK (R6) | 1100 | Sedimentation/Siltation |
| 6 | WARD CREEK | 1100 | Sedimentation/Siltation |
| 6 | BLACKWOOD CREEK | 1100 | Sedimentation/Siltation |
| 6 | GOODALE CREEK | 1100 | Sedimentation/Siltation |
| 6 | EAST WALKER RIVER | 1100 | Sedimentation/Siltation |
| 6 | HEAVENLY VALLEY CREEK | 1100 | Sedimentation/Siltation |
| 6 | WOLF CREEK (1) | 1100 | Sedimentation/Siltation |
| 6 | WEST WALKER RIVER | 1100 | Sedimentation/Siltation |
| 6 | HOT SPRINGS CANYON CREEK | 1100 | Sedimentation/Siltation |
| 6 | BRONCO CREEK | 1100 | Sedimentation/Siltation |
| 6 | SQUAW CREEK | 1100 | Sedimentation/Siltation |
| 7 | IMPERIAL VALLEY DRAINS | 1100 | Sedimentation/Siltation |
| 7 | NEW RIVER (R7) | 1100 | Sedimentation/Siltation |
| 7 | ALAMO RIVER | 1100 | Sedimentation/Siltation |
| 8 | SAN DIEGO CREEK, REACH 1 | 1100 | Sedimentation/Siltation |
| 8 | RATHBONE (RATHBUN) CREEK | 1100 | Sedimentation/Siltation |
| 8 | SAN DIEGO CREEK, REACH 2 | 1100 | Sedimentation/Siltation |
| 8 | UPPER NEWPORT BAY ECOLOGICAL RESERVE | 1100 | Sedimentation/Siltation |
| 8 | BIG BEAR LAKE | 1100 | Sedimentation/Siltation |
| 8 | ELSINORE, LAKE | 1100 | Sedimentation/Siltation |
| 9 | SAN ELIJO LAGOON | 1100 | Sedimentation/Siltation |
| 9 | LOS PENASQUITOS LAGOON | 1100 | Sedimentation/Siltation |
| 9 | AGUA HEDIONDA LAGOON | 1100 | Sedimentation/Siltation |
| 9 | BUENA VISTA LAGOON | 1100 | Sedimentation/Siltation |

Attachment 4

**NEW OWNER INFORMATION AND CHANGE OF INFORMATION (COI) FORM FOR THE GENERAL CONSTRUCTION PERMIT NO. CAS000002**

Owners Name: _____ Date: _____

WDID No.: _____ Date of Last NOI Change: _____

Prepared By: _____ Signature of Preparer: _____

| | Area Transferred (acres)[1] column 1 | Area Remaining (acres)[2] column 2 | Lot/Tract Numbers Transferred | Contact Person and Company Name of NewOwner(s) | Address(es) of the New Owner(s) | Phone # of New Owner | Is Const/Post Construction Complete? Yes/No | Date of Ownership Transfer |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

[1]Use approximate area (in acres) if no exact figure is available.

[2]Calculate running total in this column as follows:

Enter in column 2, line 1, the area from NOI minus the area in column 1.

Enter in column 2, line 2, the area in column 2, line 1, minus the area in line 2, column 1.

Enter in column 2, line 3, the area in column 2, line 2, minus the area in line 3, column 1, and so forth.

# APPENDIX "E"

# SPECIFICATIONS
# FOR
# REMOVAL OF DUMPED FILL,
# SHOOTING RANGE DEBRIS
# AND IMPACTED SOIL

# SPECIFICATIONS FOR REMOVAL OF DUMPED FILL, SHOOTING RANGE DEBRIS AND IMPACTED SOIL

## TABLE OF CONTENTS

## 1.0 SCOPE OF WORK SUMMARY

The following is a summary of the Scope of Work (SOW) for Riverside County Flood Control and Water Conservation District (District) Contract Bid Item 5 (Dumped Fill Removal) and Bid Items 6, 7, 8, 9, 10 and 11 (Shooting Range Debris and Impacted Soil Removal). The Bidder shall refer to the complete Specifications and Contract Documents for details and other specific requirements for this project.

## 2.0 BID ITEM 5 – DUMPED FILL REMOVAL

It has been estimated that approximately 65,000 cubic yards of material exist in the dumped fill area (Genterra, 2006). Based on soil borings drilled in 1992, the fill material was determined to range in thickness from 13 feet to a maximum of 23 feet (Leighton and Associates, 1992). In addition, review of available data indicates the majority of the dumped fill area is believed to be composed of inert construction debris such as wood, brick, asphalt, concrete, glass, reinforcing bar, metals and similar non-hazardous material.

This material is to be removed from its current location and the materials segregated for use as onsite fill material (if suitable) or disposal offsite based on the methodology described in the following subsections.

Continuous Environmental Monitoring

As the dumped fill is excavated, the Contractor shall ensure that the excavation is continuously monitored to identify, segregate and inventory suspect materials, if any are discovered. Monitoring will be based on visual information, presence of odors, and presence of volatile organic compound (VOC) emissions as measured with a photoionization detector (PID). Suspect materials are defined as any non-natural material that could conceivably be hazardous, or any container that has unidentified contents, exhibits an unusual odor, or has VOC emissions. Any container with liquids will automatically be considered a suspect material. Other materials that will automatically be segregated include, but are not limited to batteries, asbestos-containing material (ACM), fluorescent light fixtures, discarded electronic items, treated wood and household hazardous waste.

Removal of Suspect Materials in the Dumped Fill

In the event that suspect material is found/detected, the Contractor shall immediately notify the Engineer. The suspect materials shall be segregated into a secure area for further evaluation and classification. The secure area shall be fenced, have a plastic liner at least 10 mils thick, have perimeter berms to contain any spills and include a rain cover over a portion of the area. Drum pallets with secondary containment shall be available for temporary storage of drums. All liquid containers should be stored under the rain cover. Such material shall not be disposed of without proper documentation. The District's environmental oversight representative (i.e., staff from the County Department of Environmental Health (CDEH)) will be available on short notice to assist in monitoring the removal of suspect materials and the Dumped Fill CDEH oversight fees will be

reimbursed by the District. The CDEH representative's participation and assistance will be helpful in preventing project delays when/if suspect hazardous materials are found.

If a container that has spilled or leaked unknown liquids is encountered in the dumped fill, the contents of the container should be characterized as quickly as possible so a determination can be made as to whether or not a reportable release has occurred. The characterization and disposition of any such find shall be coordinated with the CDEH.

Any spill that might constitute a threat or potential threat to public health or the environment, including actual or potential impacts to waterways, should be immediately reported to the following agencies:

- Palm Springs Fire Department (760.323.8181)
- Cathedral City Fire Department (760.770.8200)
- Riverside County Department of Environmental Health - Palm Springs Office (760.320.1048)
- California Governor's Office of Emergency Services (800.852.7550)
- National Response Center if the spill exceeds CERCLA reportable quantities (800.424.8802)

Verbal notification should be followed by submittal of a written report, within 24-hours of the incident.

Offsite disposal, if necessary, will be based on characterization of the suspect material in accordance with the waste disposal Bid Items 9, 10 and 11.

## 3.0 BID ITEMS 6 THROUGH 11 – SHOOTING RANGE DEBRIS AND IMPACTED SOIL REMOVAL

Goals

The goals of these bid items are to:

1. Remove shooting range debris consisting of target debris and lead pellets in Area 1 shown on Figure 1, and as described in Section 3.1. The shooting range debris will be removed until no further visual evidence of shooting range debris is encountered.

2. Remove impacted soil with lead, polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH) or other contaminants. The affected soil will be removed until confirmation soil sampling with laboratory analysis indicates that no further removal is necessary.

Specifically, this bid item will consist of the following:

- Bid Item 6 - Removal of Surficial Shooting Range Debris

- Bid Item 7 - Excavation and Stockpiling of Subsurface Shooting Range Debris and Impacted Soil
- Bid Item 8 - Confirmation Soil Sampling
- Bid Items 9, 10 and 11 - Waste Profiling, Transportation and Disposal

Three (3) days prior to beginning any of the work associated with Bid Items 6 through 11, the Contractor shall notify the Engineer who in turn will notify the CDEH to function as an oversight agency. This work shall proceed only after the Engineer has advised the Contractor to proceed with the work.

Personal Monitoring

Per the Code of Federal Regulations, Title 29, Part 1926.62 (lead), a program for personal monitoring for lead will be required while performing soil excavation at the site. In addition, personal monitoring for PAHs, particulate matter and silica shall be conducted. Selected staff performing activities that involve handling or disturbing potential lead- and/or PAH-containing soil will wear personal monitoring devices for an initial period of time (most likely one 8-hour period). At the end of the initial period of time, the devices will be sent to a laboratory and analyzed for lead, PAHs, particulate matter and silica. Results obtained will be used to determine the level of personal protection necessary for the remainder of the excavation activities. All staff in the excavation area must wear Level C personal protection equipment (PPE) and respirators until the personal monitoring data is evaluated. Based on the results of the personal monitoring, PPE including respirators may or may not be required for the remainder of the project.

### 3.1 Bid Item 6 – Removal of Surficial Shooting Range Debris

The goal of this subtask is to remove the visible surficial shooting range debris (target debris and lead pellets) located in Area 1 (see Figures 1 and 2). The area containing surficial shooting range debris is estimated to be 20,120 square feet. The Contractor shall remove the target debris along with the least amount of soil as possible. Typical best management practices for shooting range debris removal should be employed. These include, but are not limited to the following practices:

- Vacuuming of the target debris; and/or
- Manual removal of target debris with hand tools (rakes, shovels, etc.).

Following surface target debris removal, the target debris shall be placed in a separate stockpile. A visual inspection shall be performed in the presence of the Engineer and CDEH during and following the surficial shooting range debris removal described in Bid Item 6. Upon concurrence by the Engineer and CDEH that the surface debris removal is complete, results of such inspection shall be documented and provided to the Engineer and CDEH.

### 3.2 Bid Item 7 – Excavation and Stockpiling of Subsurface Shooting Range Debris and Impacted Soil

This subsection covers excavation, testing and characterization of subsurface material. Based on a site assessment performed in November 2012 and previous investigations, several areas have been identified that require excavation and stockpiling of soil based on the visual observation of shooting range debris and the presence of impacted soil. The remedial excavation areas and depths are identified in Figure 2. These remedial excavations are driven by the presence of target debris at depth and analytical results of soil samples. These areas may be generally described as follows:

1. Area 1 remedial excavation to a depth of 1 foot shall be performed only after the surficial debris cleanup as described in Bid Item 6 (Removal of Surficial Shooting Range Debris) has been completed.

2. Area 2 remedial excavations to a depth varying from 1 foot to 3 feet.

It is anticipated that conventional construction equipment, such as excavators, will be used to excavate the impacted soil. Excavated soil must be temporarily stockpiled and sampled for waste profiling. Waste materials shall be stockpiled on a 20-mil reinforced polyethylene liner. Stockpiled waste will be managed to prevent fugitive dust emissions and erosion.

### 3.3 Bid Item 8 - Confirmation Soil Sampling

Two types of confirmation for completion of remedial excavation activities shall be performed:

1. **Visual Inspection**. Upon reaching the proposed depth in each of the remedial excavations, the Contractor, in the presence of the Engineer and CDEH, shall perform a visual inspection of the remediation area and document that the area has been cleared of target debris/pellets. Such documentation shall be provided to the Engineer and CDEH. If the area is not clear of target debris/pellets, additional excavation shall be performed in affected areas until the target debris/pellets are removed based on visual observation.

2. **Laboratory Analysis of Confirmation Samples**. Upon reaching the proposed depth in each of the proposed remedial excavations, an appropriately licensed professional (Professional Geologist or Professional Engineer - Civil), or an individual under the purview of said professional, will collect one confirmation soil sample within each 2,500 square foot cell based on a random location selection. For Area 1 remedial excavations, approximately 6 confirmation soil samples will be collected. For Area 2 remedial excavations, approximately 15 confirmation soil samples will be collected. The soil samples will be analyzed by a state-certified laboratory for:

   a. Total lead by EPA Method 6010
   b. PAHs by EPA Method 8270 SIM

c. Total TPH by EPA Method 8015

The excavation area where confirmation sampling has been conducted will remain undisturbed until laboratory results are obtained and reviewed. The Contractor shall note that a minimum of three (3) working days is required (even if sample analysis is expedited) to receive the sample results due to the lead extraction process. If confirmation sample results are above cleanup goals (see Table 4), then an additional 1 foot of soil within the area (approximately 2,500 square feet) will be removed and another round of confirmation samples will be collected. This process will be repeated until results are below the established cleanup goals. For each round of sampling, a minimum of three (3) working days is required to receive the laboratory results. The cleanup goals may be changed based on possible regulatory agency guidance.

### 3.4 Bid Items 9, 10 and 11 – Waste Profiling, Transportation and Disposal

Waste Profiling

Prior to offsite disposal, stockpiled materials will be sampled by a Professional Geologist or Professional Engineer – Civil or an individual under the purview of said professional to assure compliance with the profiling requirements of the selected waste facility. Samples will be submitted to a state-certified laboratory under proper chain of custody documentation. No separate measurement for payment will be made for profiling sampling.

Selection of Disposal Facility

The Contractor shall select a state-approved licensed disposal facility for the disposal of the three types of waste (Non-Hazardous, RCRA, and Non-RCRA [California Hazardous]). The disposal facility/facilities shall be selected from the list provided in Table 1. For the purposes of establishing contract pay items, the waste shall be characterized into three categories for measurement and payment:

Bid Item 9 - Waste Profiling, Transportation and Disposal (Non-Hazardous)
Bid Item 10 - Waste Profiling, Transportation and Disposal (RCRA)
Bid Item 11 - Waste Profiling, Transportation and Disposal (Non-RCRA) (California Regulated)

It is anticipated that all shooting range debris and impacted soil removed during the remedial excavations associated with the shooting range debris and impacted soil will be transported to an offsite facility for disposal. However, if the waste profiling indicates that the soil is non-hazardous, a decision may be made by the District to reuse the soil or a portion of the soil at the site. The waste profiling may indicate that the waste could be disposed at a Non-Hazardous, RCRA, and/or Non-RCRA (California Hazardous) facility. The waste shall be disposed of at the most cost-effective disposal facilities based on profiling.

Note that disposal at a Native American Reservation will not be allowed.

The Contractor is responsible to profile the waste according to the requirements (analysis, sampling frequency, etc.) required by the disposal facility.

Transportation and Offsite Disposal

Disposal tonnage will be based on the weight tickets from the trucks carrying the material to offsite disposal facilities. The weight tickets and manifests for hazardous and non-hazardous waste must be provided during invoicing.

Weight tickets, manifests and disposal facility forms for each non-hazardous and hazardous truckload leaving the site will be prepared and collected for documentation purposes. Waste materials classified as a non-RCRA or RCRA waste will be assigned the applicable state or federal waste codes for profiling and manifesting. All shipments of hazardous waste will be accompanied by a State-approved Uniform Hazardous Waste manifest and all other necessary forms. All shipments of non-hazardous waste will be accompanied by a non-hazardous waste manifest. The District or an authorized representative will sign the disposal manifests. After the waste is loaded into the vehicles, it shall be covered with tarps or equivalent covers to minimize dust emissions.

Transportation shall be performed by a licensed waste hauler.

### 3.5 Bid Item 12 – Final Closure Report

The Contractor is responsible for engaging a Professional Geologist or Professional Engineer – Civil (or an individual under the purview of said professional) to collate and summarize all sampling results and disposal documentation in a Removal Documentation and Closure Report or technical appendix. The intent of the report is to provide sufficient information to allow the CDEH to issue a "no further action" (NFA) letter. The minimum requirements for Closure Request Documents established by the CDEH shall be followed.

## 4.0 CLARIFICATIONS AND ASSUMPTIONS

- Quantities are estimated and are not guaranteed.
- Tonnages for disposal are to be determined based on truck scale weights.
- Contractor must have Hazardous Waste Certification.
- The personnel working in Areas 1 and 2 should be OSHA 40-hour trained per 29 CFR 1910.120, 1990.
- Staff working with lead-affected soil or within the lead-affected areas must be enrolled in a medical surveillance program that includes analysis for lead levels in blood and lung capacity testing for clearance to wear a respirator. Staff must also have lead awareness training and be fit tested for use of a respirator.
- Exclusion Zones shall be established around Areas 1 and 2 during soil removal activities.
- Initial work in Areas 1 and 2 will be performed in Level C PPE consisting of Tyvek coveralls and half-face respirator with particulate cartridges. The level of PPE may

be downgraded if results from personal monitoring (Section 3.0) indicate that it is safe to do so.

## 5.0 REFERENCES

Earth Systems Southwest, 2002, Report of Environmental Testing and Evaluation of Proposed Eagle Canyon Dam, February 20.

Genterra, 2007, Hazardous Waste Remediation Plan for the Proposed Eagle Canyon Dam and Debris Basin, February 10.

Genterra, 2006, Technical Memorandum, Completion of Additional Seismic Survey, November 2.

Leighton and Associates, 1992, Preliminary Hazardous Materials Investigation, Proposed Eagle Canyon Dam Site, Palm Springs, California, September 29.

## TABLE 1
## POTENTIAL DISPOSAL FACILITIES

| Facility Owner | Facility Name | Address | City | State | Phone No. |
|---|---|---|---|---|---|
| **Class I Hazardous Waste Landfill Permitted for RCRA Waste** | | | | | |
| Clean Harbors | Buttonwillow Landfill | 2500 W. Lokern Road | Buttonwillow | CA | 661.762.6200 |
| Waste Management | Kettleman Hills | 35251 Old Skyline Road | Kettleman City | CA | 559.309.7688 |
| U.S. Ecology, Inc. | Beatty Facility | Highway 95 S. | Beatty | NV | 800.239.3943 |
| **Landfill Permitted for Non-RCRA (California Hazardous) Waste** | | | | | |
| Republic Services, Inc. | Copper Mountain Landfill | 34853 E. County 12th Street | Welton | AZ | 928.785.3797 |
| Waste Management | Butterfield Station Landfill | 40404 S. 99th Avenue | Mobile | AZ | 602.437.3165 |
| Clean Harbors | Buttonwillow Landfill | 2500 W. Lokern Road | Buttonwillow | CA | 661.762.6200 |
| Waste Management | Kettleman Hills | 35251 Old Skyline Road | Kettleman City | CA | 559.309.7688 |
| U.S. Ecology, Inc. | Beatty Facility | Highway 95 S. | Beatty | NV | 800.239.3943 |
| **Landfill Permitted for Non-Hazardous Waste** | | | | | |
| A Permitted Class III Municipal Waste Landfill | | -- | -- | -- | -- |
| Republic Services, Inc. | Copper Mountain Landfill | 34853 E. County 12th Street | Welton | AZ | 928.785.3797 |
| Waste Management | Butterfield Station Landfill | 40404 S. 99th Avenue | Mobile | AZ | 602.437.3165 |

**TABLE 2**
**PROPOSED CLEANUP GOALS**

| Compound | Laboratory Testing Method | Reporting Limit (mg/kg) | Cleanup Goal [1,2,3] (mg/kg) |
|---|---|---|---|
| Lead | EPA Method 6010B | 0.5 | 50 |
| PAHs | | | |
| Benzo(a)anthracene | EPA Method 8270C-SIM | 0.006 | 2.1 |
| Benzo(a)pyrene | EPA Method 8270C-SIM | 0.006 | 0.21 |
| Benzo(b)fluoranthene | EPA Method 8270C-SIM | 0.006 | 2.1 |
| Benzo(k)fluoranthene | EPA Method 8270C-SIM | 0.006 | 21 |
| Chrysene | EPA Method 8270C-SIM | 0.006 | 210 |
| Dibenz(a,h)anthracene | EPA Method 8270C-SIM | 0.006 | 0.21 |
| Indeno(1,2,3-cd)pyrene | EPA Method 8270C-SIM | 0.006 | 2.1 |
| Naphthalene | EPA Method 8270C-SIM | 0.006 | 18 |
| Total Petroleum Hydrocarbons | EPA Method 8015 | 1.0 | 1,000 |

Notes:
mg/kg = milligrams per kilogram
(1) Lead - see background lead discussion in Genterra 2007 Hazardous Waste Remediation Plan
(2) PAHs - EPA Industrial Regional Screening Levels (November 2012)
(3) TPH - anticipated agency cleanup goal

# APPENDIX "F"

# CONCRETE POUR CARD

**EAGLE CANYON DAM AND DEBRIS BASIN**
**DSOD DAM NO. 1003-17**
**DISTRICT PROJECT NO. 6-0-0190**

| CONCRETE POUR CARD | | |
|---|---|---|
| POUR NO. | | LIFT NO. |
| CUBIC YARDS THEORETICAL | CUBIC YARDS ACTUAL | DATE |
| CONCRETE MIX | | STRENGTH |
| IDENTIFICATION OF POUR | | |
| DRAWINGS | | |
| READY FOR POUR | SIGNATURES AND DATES | |
| FORMS | | |
| REINFORCING | | |
| PIPING | | |
| ELECTRICAL | | |
| MECHANICAL | | |
| MISCELLANEOUS | | |
| ENGINEERING | | |
| QUALITY CONTROL | | |
| WATERSTOP | | |
| EMBEDMENTS | | |
| SURFACE PREPARATION | | |
| WORKING CONDITIONS | | |
| TIME STARTED | TIME COMPLETED | |
| REMARKS | | |
| RELEASED FOR POUR<br>_____<br>ENGINEER | | |

# APPENDIX "G"

# STATE OF CALIFORNIA
# DEPARTMENT OF FISH AND GAME

# 1602 AGREEMENT

CALIFORNIA DEPARTMENT OF FISH AND GAME
INLAND DESERTS REGION
78078 COUNTRY CLUB DRIVE, SUITE 109
BERMUDA DUNES, CA 92230

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2011-0212-R6
UNNAMED DRAINAGE AND NORTH CATHEDRAL CANYON CHANNEL/SALTON SEA
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
EAGLE CANYON DAM AND DEBRIS BASIN

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and the Riverside County Flood Control and Water Conservation District (Permittee) as represented by Warren Williams.

## RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on August 23, 2011 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

## PROJECT LOCATION

The project is located about 500 feet southeast of the intersection of Canyon Plaza Drive and Highway 111 (East Palm Canyon Drive) in the City of Cathedral City, in the County of Riverside, State of California; Sections 32 and 33, Township 4 South, Range 5 East, U.S. Geological Survey (USGS) Quad Map Cathedral City. Assessor Parcel Numbers: 687-020-018, 687-020-011, 687-020-007, 687-030-015, 687-030-064 and 687-030-074. Latitude 33.783114$^0$ N, Longitude 116.471414$^0$ W.

## PROJECT DESCRIPTION

The project (Exhibit A, Figure 1) consists of the construction, operation and maintenance of an earthen dam, detention/debris basin, temporary earthen channel and underground storm drain in order to provide flood detention and flood hazard mitigation for the developed portion of Cathedral City located downstream of the project site. The

project includes an off-site component of an underground storm drainage pipe (Line 43) from the Eagle Canyon site east to Perez Road and along Perez Road to its' outfall at the North Cathedral Canyon Channel with a side branch (Line 43a) that extends from Jessup Auto Plaza to Perez Road. The majority of the project site is located within the Agua Caliente Indian Reservation (Agua Caliente Band of Cahuilla Indians). Portions of the site are within the Cities of Cathedral City and Palm Springs. During periods of heavy rainfall, some combination of floodwaters, mud and debris funnel down Eagle Canyon and have caused damage downstream of the canyon in Cathedral City. For example, on July 20, 2008, a rainfall event resulted in significant flooding in the southern Cathedral City area that flooded a trailer park, auto dealership and businesses along East Palm Canyon Drive with water, mud and debris. The proposed project would greatly reduce potential impacts from future flood events.

The site was previously used as a gravel pit, unpermitted landfill and unauthorized shooting range. Because of these previous uses, site remediation will be required to remove lead-impacted soil, an abandoned underground storage tank (UST) and construction debris previously dumped on site. After site remediation, debris basin excavation will be performed in order to develop sufficient storage capacity to achieve project purposes and provide the necessary borrow material to construct the adjacent earthen dam. The planned cut slopes of the basin will generally follow the buried bedrock surfaces but depths cannot be estimated exactly until overlying dumped fill material (resulting from previous uses) is removed.

The crest of the earthen dam would be about 20 feet wide with a 15-foot-wide bench along the upstream slope. Upstream and downstream slopes would be constructed at a slope of 2.5 to 1. The crest of the dam would be about 405 feet above mean sea level (MSL) and be about 53 feet above the toe of the downstream slope. The amount of fill material required is estimated to be about 217,000 cubic yards before compaction.

The basin and earthen dam are designed to retain the runoff for a 100-year storm event and drain within about 72 hours. The basin will be able to contain 187 acre-feet of water. The maximum single-event debris yield is estimated to be about 16 acre-feet. An emergency overflow spillway will be constructed that will allow water to pass safely over the dam in the event the dam's storage capacity is exceeded. The spillway will consist of a 48-foot wide weir that will be excavated into the rock ridge that forms the left abutment (facing downstream) of the dam. A stilling basin will be constructed at the downstream terminus of the spillway to dissipate energy from high velocity flows to acceptable levels. Concrete will be used in portions of the spillway to prevent erosion. The remainder of the spillway is planned to be an unlined channel excavated in rock.

Structures associated with the outlet for the dam and debris basin include an intake structure, outlet pipe and headwall. The intake structure will be inclined and formed into the upstream face of the dam. The headwall is formed into the downstream face of the dam. The outlet pipe will be connected at the headwall location and consist of a 42-inch diameter reinforced concrete pipe (RCP) for the full length of the outlet conduit.

Temporarily the outlet pipe will discharge into an earthen channel that will be constructed below the elevation of the pipe's discharge point to prevent ponding. The earthen channel will continue about 900 feet until the flow-line (lowest point) of the channel matches the elevation of the adjacent ground surface. The aforementioned design will moderate discharges, if rainfall events occur, until connection to the existing storm drain system occurs.

Ultimately, the earthen channel will be replaced by an underground storm drain system, Line 43, which will trend eastward along the northern boundary of Assessor's Parcel Number (APN) 687-460-016 to Perez Road then parallel Perez Road northeastward to the North Cathedral Canyon Channel. Line 43 will be constructed primarily within existing street rights-of-way (ROW) for a total of about 3500 linear feet until it's' outfall at the North Cathedral Canyon Channel. A side branch (Line 43a) of the storm drainage system will extend about 950 linear feet from Jessup Auto Plaza to Perez Road. Line 43 will start at the headwall with a 42 inch diameter RCP and transition to a reinforced concrete box (RCB) that will range in size from 5 to 14 feet until the outlet at the North Cathedral Canyon Channel. Line 43a consists of a 42 inch diameter RCP.

The entire project, including initial site remediation, will take about nine months to complete. The project is not located within a conservation area of the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). The majority of the site is located within the Agua Caliente Indian Reservation with portions within the Cities of Cathedral City and Palm Springs. The project site is within the Valley Floor Conservation Area (VFCA) of the Agua Caliente Band of Cahuilla Indians' Tribal Habitat Conservation Plan (HCP). The Tribal HCP has been adopted by the Tribe and submitted to the U.S. Fish and Wildlife Service (USFWS) as part of a Section 10(a) permit application. The Section 10(a) permit is currently being considered by the USFWS. In the event that the Tribal HCP is approved during the duration of this Agreement, the Permittee will also comply with the conditions of the HCP.

**PROJECT IMPACTS**

Existing fish or wildlife resources the project could substantially adversely affect include: Western burrowing owl (*Athene canicularia hypugaea*), neotropical migrant bird species and peninsular bighorn sheep (*Ovis Canadensis nelsoni).*

The adverse effects the project could have on the fish or wildlife resources identified above include: potential disturbance to burrowing owls that may use potential foraging habitat within the project area, impacts to neotropical migrant bird species and their habitat and potential disturbance to peninsular bighorn sheep that may use foraging habitat in or near the project area.

The adverse effects the project could have on the fish and wildlife resources identified above include the temporary and permanent loss of nesting and/or foraging habitat. In addition, the construction of the project will have the following impacts on streambed:

Temporary impacts will occur to 0.52 acres of unvegetated streambed and permanent impacts to 0.97 acres of unvegetated streambed.

## MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

### 1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time to verify compliance with the Agreement.

1.5 Take of Nesting Birds. Sections 3503, 3503.5, and 3513 of the California Fish and Game Code prohibit the take of all birds and their active nests, including raptors and other migratory non-game birds (as listed under the United States Migratory Bird Treaty Act).

### 2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 Burrowing Owl. A pre-construction survey will be required for burrowing owls during peak activity period (one hour before to two hours after sunrise or two hours before to one hour after sunset) between 14 and 30 days prior to the start of construction and a second pre-construction survey within 24 hours of ground disturbance. The impact area and a 500 foot buffer (where practicable) will be surveyed. If owls are located during the surveys, a buffer area will be established according to guidelines included in the March 7, 2012 DFG *Staff Report on Burrowing Owl Mitigation* (Staff Report) if located between February 1 and August

31 (nesting season). A modified buffer reduction may be used with DFG concurrence. If located outside this time period, owls may be relocated by a qualified biologist according to the procedures outlined in the Staff Report or a modified buffer reduction may be used with DFG concurrence. If burrowing owls are found on site, the Permittee shall submit the survey results to the DFG Region 6, 4665 Lampson Avenue, Suite J, Los Alamitos, CA 90720. **ATTN: Streambed Team,** at least five days prior to commencing project activities pursuant to the Agreement. **Please reference SAA# 1600-2011-0212-R6.**

2.2 Neotropical Migrant Bird Species. In order to avoid impacts to neotropical migrant bird species, no native vegetation may be removed between March 15 and September 15 unless a pre-construction survey of the work area and a 500 foot buffer area indicates no nesting activity.

2.3 Peninsular Bighorn Sheep. A qualified biologist shall conduct a pre-construction survey of the project site within 10 days prior to ground disturbing activities to determine whether peninsular bighorn sheep are present in the area as determined by the presence of fresh bighorn sign. If peninsular bighorn sheep or fresh bighorn sheep sign is found, USFWS and DFG will be consulted to determine what additional mitigation measures may be required.

2.4 Pollution and Litter. The Permittee shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws and it shall be the responsibility of the Permittee to ensure compliance.

2.4.1 The Permittee shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter a lake, streambed, or flowing stream or be placed in locations that may be subjected to high storm flows.

2.4.2 Spoil sites shall not be located within a lake, streambed, or flowing stream or locations that may be subjected to high storm flows, where spoil shall be washed back into a lake, streambed, or flowing stream where it will impact streambed habitat and aquatic or riparian vegetation.

2.4.3 Raw cement/concrete or washings thereof, asphalt, paint, or other coating material, oil or other petroleum products, or any other substances which could be hazardous to fish and wildlife resources resulting from project related activities shall be prevented from contaminating the soil and/or entering the waters of the State. These materials, placed within or where they may enter a lake, streambed, or flowing stream by the Permittee or any party working under contract or with the permission of the Permittee, shall be removed immediately.

2.4.4 No broken concrete, cement, debris, soil, silt, sand, bark, slash, sawdust,

rubbish, or washings thereof, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any lake, streambed, or flowing stream.

2.4.5 No equipment maintenance shall be done within or near any lake, streambed, or flowing stream where petroleum products or other pollutants from the equipment may enter these areas under any flow.

**3. Compensatory Measures**

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Debris Removal. The site was previously used as a gravel pit, unpermitted landfill and unauthorized shooting range. Construction debris mixed with soil and empty 55 gallon drums will be removed from 0.78 acres of streambed that will not be impacted by the proposed project.

3.2 Fencing. A perimeter security fence will be established and maintained by the Permittee to prevent future unauthorized dumping and access to the site.

3.3 Eagle Canyon (On-Site) Non-Native Plant Species Removal. Approximately 0.15 acres of non-native, invasive fountain grass (*Pennesetum setaceum*) will be removed from immediately upstream of the project site (Exhibit A, Figure 2).

3.4 Tahquitz Canyon (Off-Site) Non-Native Species Plant Removal. Approximately 1.89 acres of non-native, invasive fountain grass will be removed from the Tahquitz Canyon Channel (Exhibit A, Figure 3) within the City of Palm Springs. Tahquitz Canyon Channel is located north of West Mesquite Avenue, south of Ramon Road and west of Highway 111 within the same watershed as the project site and also within the District's ROW.

3.5 Project Area Invasive Plant Control. Non-native plants will be removed and/or controlled within the project area and mitigation areas for a period of five years post-project completion. Invasive species will be removed and/or controlled by mechanical means.

3.6 Invasive Plant Monitoring. Occurrence of non-native plants will be monitored within the project site and mitigation areas for five years post-project completion.

## 4. Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 Habitat Mitigation and Monitoring Plan. **No later than 90 days after the signature to this Agreement and prior to the initiation of any project activities in state jurisdictional areas,** the Permittee will submit to DFG a Habitat Mitigation and Monitoring Plan (HMMP) designed to meet the overall goals identified in section 3. At a minimum, the HMMP shall include the following information: (a) a description of the existing physical conditions at the project site, (b) a plan for control of non-native invasive plant species and (c) success criteria for achieving control.

4.2 Photo Documentation. Four photo monitoring points will be established. Photo Point No. 1 will be established at or near the approximate midpoint of the top of the earthen dam. Two photos will be taken from this point, one up-canyon and one down-canyon. Photo Point No. 2 will be established on the west side of the canyon at a point where a clear view of the debris basin is possible from a location higher than the debris basin. The photo from this point will face towards and downward to the debris basin. Photo Point No. 3 will be established downstream from the Eagle Canyon (on-site) mitigation area (Exhibit A, Figure 2) and the photo will be taken upstream toward the mitigation area. Photo Point No. 4 will be established downstream from the Tahquitz Canyon (off-site) mitigation area (Exhibit A, Figure 3) and the photo will be taken upstream toward the mitigation area. A total of five photos will be taken during each photo monitoring session. Photo documentation will be performed from each point prior to project initiation and after project completion. These photos will be included in the Project Completion Report (see Measure 4.3). Photo documentation will also be performed annually and included in the Annual Reports (see Measure 4.4).

4.3 Project Completion Report. **No later than 90 days after project completion,** the Permittee will submit to DFG a report that summarizes all project activities including the implementation of all items specified in Section 2. This report will include but not be limited to: photo documentation, all survey results, avoidance/minimization measures implemented and maps that display work areas, surveyed areas and locations of any species specified in Section 2 and/or any nest/burrow of species specified in Section 2.

4.4 Annual Reporting. An annual report will be submitted to DFG for five years following signature of this Agreement providing photo documentation, documenting invasive species control and monitoring activities and degree of achievement of success criteria for each year of the Agreement. Reports will be due upon the anniversary of the signature of the Agreement.

4.5 Notification to the California Natural Diversity Data Base (CNDDB). If any sensitive species are observed on or in proximity to the project site, or during project surveys, the Permittee shall submit CNDDB forms and maps to the CNDDB within five working days of the sightings, and provide the regional DFG office with copies of the CNDDB forms and survey maps. The CNDDB form is available online at www.dfg.ca.gov/whdab/pdfs/natspec.pdf. **This information shall be mailed within five days to:** California Department of Fish and Game Natural Diversity Data Base, 1807 13th Street, Suite 202, Sacramento, CA 95814. Phone (916) 324-3812. A copy of this information will be mailed within five days to the DFG Region 6, 4665 Lampson Avenue, Suite J, Los Alamitos, CA 90720. **ATTN: Streambed Team. Please reference SAA# 1600-2011-0212-R6.**

4.6 Notification of Start of Construction. The Permittee shall notify DFG, in writing, at least five days prior to initiation of project activities in state jurisdictional areas and at least five days prior to completion of project activities in jurisdictional areas. Notification shall be mailed to the DFG Region 6, 4665 Lampson Avenue, Suite J, Los Alamitos, CA 90720. **ATTN: Streambed Team. Please reference SAA# 1600-2011-0212-R6.**

**CONTACT INFORMATION**

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

Kris Flanigan
Senior Civil Engineer
Riverside County Flood Control and Water Conservation District
1995 Market Street
Riverside, CA 92501
Fax: (951) 788-9965
Kflaniga@rcflood.org

To DFG:

Department of Fish and Game
Inland Deserts Region
78078 Country Club Drive, Suite 109
Attn: Lake and Streambed Alteration Program – Charles Land
Notification #1600-2011-0212-R6
Fax: (760) 200-9358
cland@dfg.ca.gov

## LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

## SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

## ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

## OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

**AMENDMENT**

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

**TRANSFER AND ASSIGNMENT**

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

**EXTENSIONS**

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal.

Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)). .

**EFFECTIVE DATE**

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

**TERM**

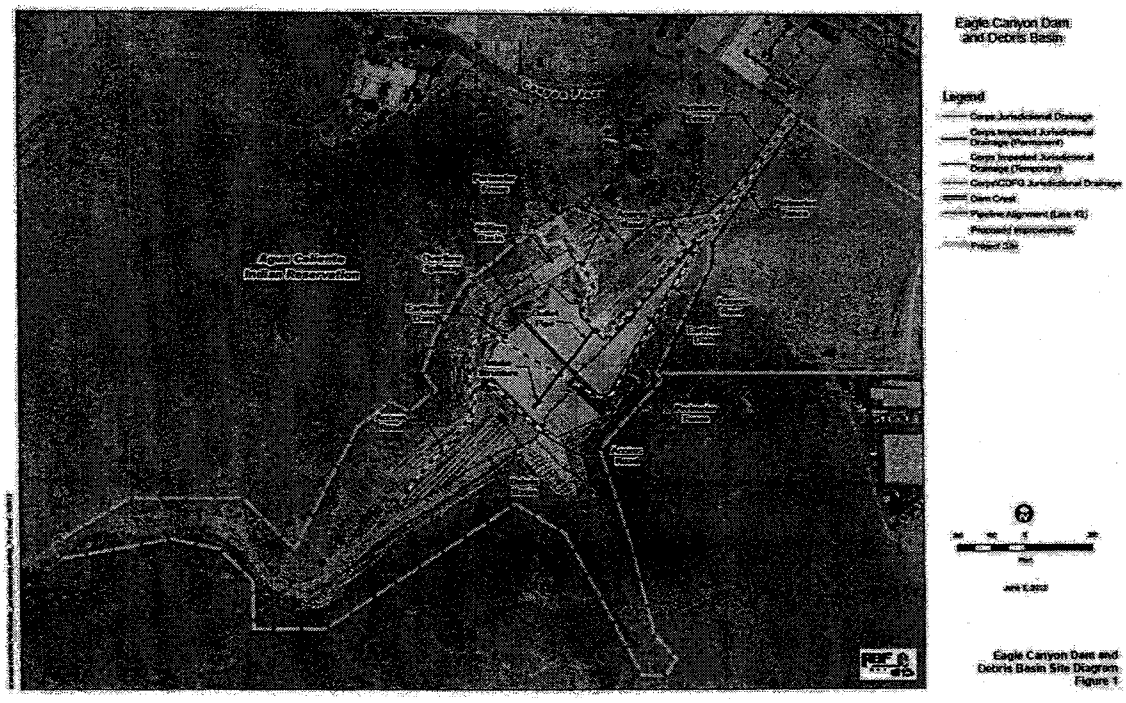
This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

**EXHIBITS**

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

A. Exhibit A-Three Maps/Diagrams

Figure 1. Eagle Canyon Dam and Debris Basin Site Diagram.
Figure 2. On-Site Mitigation Map.
Figure 3. Tahquitz Channel Mitigation Site Map.

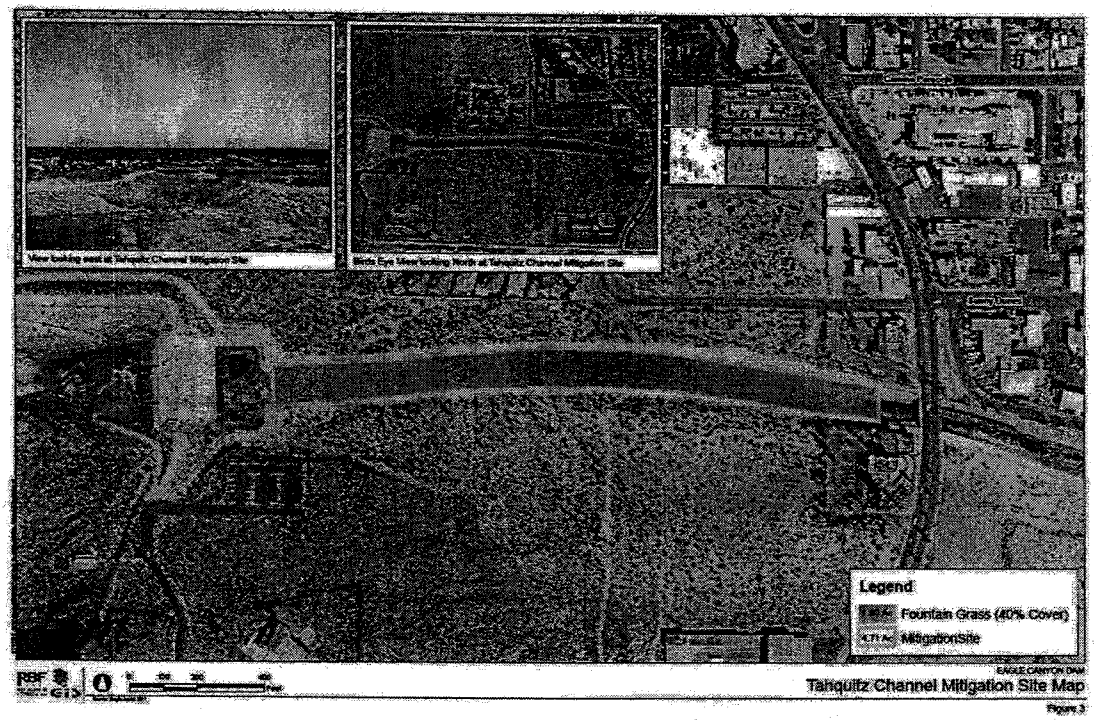



Eagle Canyon Dam and Debris Basin Site Diagram
Figure 1


EAGLE CANYON DAM

On-Site Mitigation Map

Figure 2


Legend
Fountain Grass (40% Cover)
MitigationSite
EAGLE CANYON DAM
Tahquitz Channel Mitigation Site Map

## AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

## AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

## CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**

Warren Williams
General Manager-Chief Engineer

9/10/12
Date

**FOR DEPARTMENT OF FISH AND GAME**

David Elms
Environmental Program Manager

Date

Prepared by: Charles Land
Environmental Scientist

# APPENDIX "H"

# U.S. ARMY CORPS OF ENGINEERS

# SECTION 404 PERMIT

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
RIVERSIDE FIELD OFFICE
1451 RESEARCH PARK DRIVE, SUITE 100
RIVERSIDE, CALIFORNIA 92507-2154

September 14, 2012

REPLY TO
ATTENTION OF
Regulatory Division

Mr. Warren D. Williams
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, California 92501

Dear Mr. Warren D. Williams:

Reference is made to your application for a Department of the Army Permit (Corps File No. SPL-2011-01026-JEM), dated August 12, 2011, for the installation, operation, and maintenance of an earthen dam, which would be constructed across the mouth of Eagle Canyon (ephemeral tributary of North Cathedral Canyon Channel), in the hills to the southwest of East Palm Canyon Drive (Highway 111) near its intersection with Canyon Plaza Drive, in Cathedral City, Riverside County, California. Enclosed are two copies of the permit (ENG FORM 1721) authorizing you to discharge fill onto waters of the U.S., in association with the project.

**THIS PERMIT WILL NOT BECOME VALID UNTIL ALL OF THE FOLLOWING STEPS HAVE BEEN COMPLETED:**

**1. The owner or authorized responsible official must sign and date both copies of the permit indicating that he/she agrees to the work as described and agrees to comply with all conditions stated in the permit.**

**2. The signer's name and title (if any) must be typed or printed below the signature.**

**3. Both signed copies of the permit must be returned to the Corps of Engineers at the above address (Attention: CESPL-RG). Upon receipt of the signed copies, the Corps of Engineers will sign and forward one of the copies back to you.**

Furthermore, you are hereby advised that the Corps of Engineers has established an Administrative Appeal Process which is fully described in 33 CFR Part 331. The complete appeal process is diagrammed in the enclosed Appendix B. If you object to the terms or special conditions of this permit, you may submit the attached appeal form stating your objections and describing your proposed modifications to the permit terms and special conditions to:

Colonel R. Mark Toy, District Engineer
Los Angeles District, Corps of Engineers
P.O. Box 532711
Los Angeles, California 90053-2325
Telephone (213) 452-3961 Fax (213) 452-4214
electronic-mail: R.Mark.Toy@usace.army.mil

The District Engineer would then evaluate your objections and determine whether it is appropriate to change some, all, or none of the terms and special conditions of the permit. The permit would then be provided to you a second time, at which point you could accept the permit, appeal the permit conditions to the Corps South Pacific Division office, or withdraw your permit request.

If we do not receive the signed copies of the permit by **November 15, 2012** your request for the proposed work will be withdrawn. It is not necessary to submit an appeal form unless you object to the conditions of the permit.

We have also enclosed pre-addressed postcards for you to notify this office regarding the dates for beginning and completing the authorized activity. If you have questions, please contact me at 951-276-6624 x263 or via e-mail at James.E.Mace@usace.army.mil.

Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

ORIGINAL SIGNED BY JAMES MACE
9/14/2012 3:19 PM

James E. Mace
Senior Project Manager
Orange-Riverside Section
South Coast Branch

Enclosure(s)

## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

| Applicant: Riverside County Flood Control and Water Conservation District; Warren D. Williams | File Number: SPL-2011-01026 | Date: 9/14/2012 |
|---|---|---|

| Attached is: | | See Section below |
|---|---|---|
| X | INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | A |
| | PROFFERED PERMIT (Standard Permit or Letter of permission) | B |
| | PERMIT DENIAL | C |
| | APPROVED JURISDICTIONAL DETERMINATION | D |
| | PRELIMINARY JURISDICTIONAL DETERMINATION | E |

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A. INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B. PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D. APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E. PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

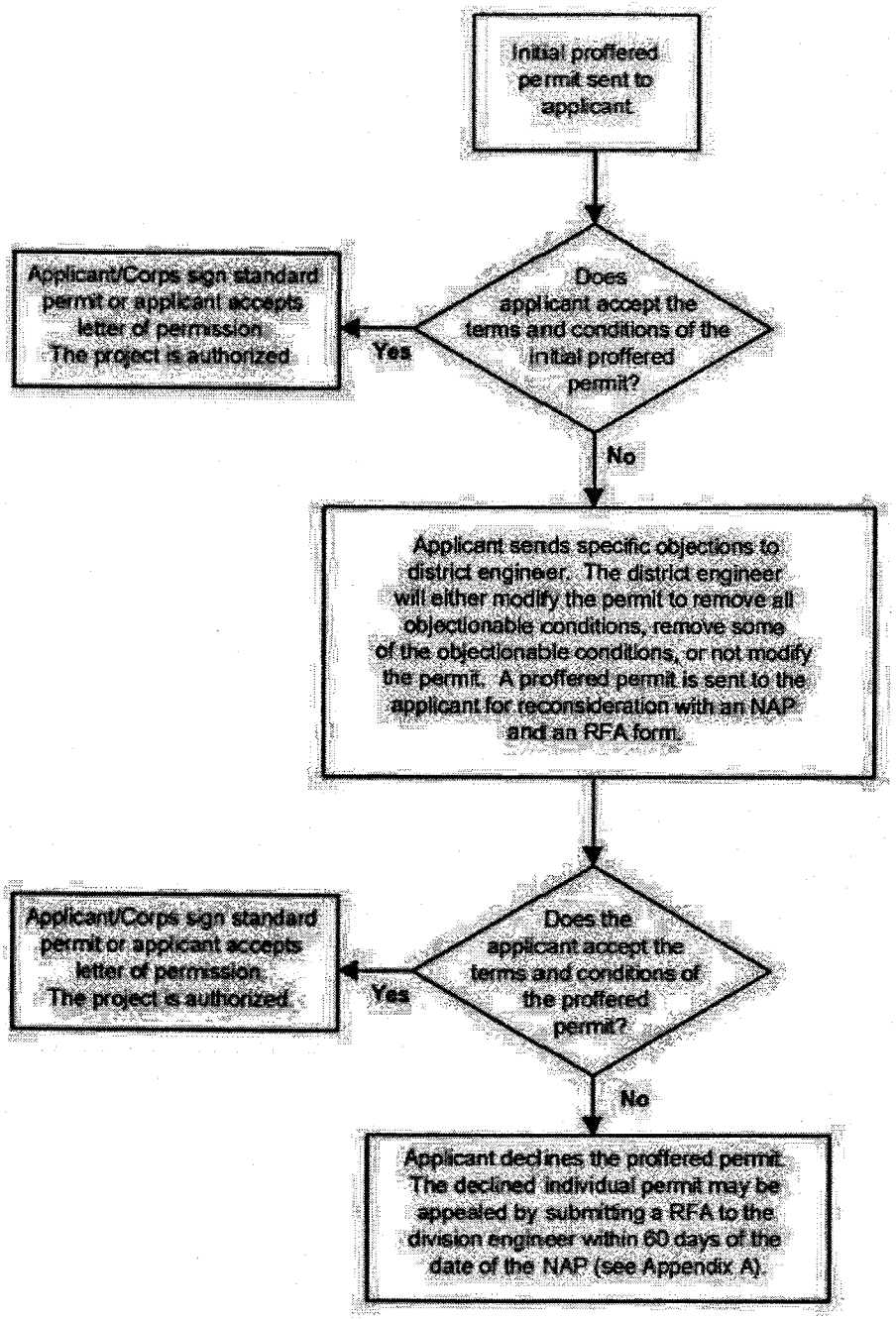
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

| If you have questions regarding this decision and/or the appeal process you may contact: | If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh<br>Administrative Appeal Review Officer,<br>U.S. Army Corps of Engineers<br>South Pacific Division<br>1455 Market Street, 2052B<br>San Francisco, California 94103-1399<br>Phone: (415) 503-6574 Fax: (415) 503-6646<br>Email: thomas.j.cavanaugh@usace.army.mil |
|---|---|

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

| _____<br>Signature of appellant or agent. | Date: | Telephone number: |
|---|---|---|

# Applicant Options with Initial Proffered Permit




**Appendix B**

*LOS ANGELES DISTRICT*
*U.S. ARMY CORPS OF ENGINEERS*

# DEPARTMENT OF THE ARMY PERMIT

**Permittee:** Riverside County Flood Control and Water Conservation District; Warren D. Williams

**Permit Number:** SPL-2011-01026-JEM

**Issuing Office:** Los Angeles District

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

**Project Description:**

The project, Eagle Canyon Dam and Debris Basin (ECDDB), is intended to provide flood detention and flood hazard mitigation for the developed portion of Cathedral City located downstream of the project site. Eagle Canyon is an ephemeral wash that drains a relatively small watershed in the San Jacinto Mountains and discharges into a wash and vacant land between Perez Road and Canyon Mountain Drive. Flows disperse across downstream properties and during heavy rainfall, floodwaters, mud, and debris flow have damaged downstream structures in Cathedral City and along Highway 111. The project site is located on both Cathedral City property and on tribal lands of the Agua Caliente Band of Cahuilla Indians (Agua Caliente Tribe). The proposed project consists of the construction of a dam and debris basin at the mouth of Eagle Canyon, as well as ongoing maintenance of the dam, sediment debris basin, and underground storm drain. The project includes the following activities:

- Site remediation activities to remove lead impacted soil from past shooting range activities, removal of an underground storage tank, and the export of illegally dumped fill and debris.
- Excavation of the debris basin to store sediments from Eagle Canyon.
- Excavation of locally sourced clean materials to construct an un-gated, 53-foot high earthen dam that would hold water for brief periods following significant flood events.
- Construction of a concrete and rock emergency overflow spillway and stilling basin that would allow water to pass safely over the dam in the event design storage volume (100-year

storm) is exceeded and to dissipate downstream flows before they spread out over the natural valley.

- Construction of an intake structure and 42-inch concrete outlet pipe that would convey flows to an earthen channel at Via Allegro Street that would eventually drain to the North Cathedral Canyon Channel.
- Unpaved maintenance access roads.
- Maintenance activities including regular inspections of the dam and other facilities, annual removal of accumulated sediment and debris from the basin, and as needed removal of any blockages to the spillway.

**Fill Authorization:**

To permanently discharge fill onto 0.97 acre and temporarily discharge fill onto 0.52 acre of waters of the U.S. pursuant to Section 404 of the Clean Water Act of 1972, in association with the construction of the dam and basin, at the mouth of Eagle Canyon in Cathedral City, Riverside County, California, (see specific authorization 1, below) as shown on the attached Exhibit 1* (*labeled Exhibit 4 in the Public Notice). Additional temporary fill after the project's installation includes fill associated with maintenance activities to include regular inspections of the dam and other facilities, annual removal of accumulated sediment and debris from the basin, and as needed removal of any blockages to the spillway (see specific authorization 2, below), as shown on the attached Exhibit 1*.

Specifically, you are authorized to:

1. Permanently discharge fill onto 0.97 acre and temporarily discharge fill onto 0.52 acre of waters of the U.S. during the construction of Eagle Canyon Dam and Debris Basin, (Exhibit 1*).
2. Conduct routine maintenance activities including regular inspections of the dam and other facilities, annual removal of accumulated sediment and debris from the basin, and as needed removal of any blockages to the spillway (Exhibit 1*). All routine maintenance activities authorized by this permit potentially affecting federally listed threatened or endangered species, and/or critical habitat(s) thereof, would be subject to promulgation (method, timing, extent, etc.) compliant with all completed informal or formal section 7 consultations for all species and/or critical habitat(s).

**Project Location:**

The ECDDB site is situated on a northerly toe of the San Jacinto Mountains. The project site is located at the mouth of Eagle Canyon, in the hills to the southwest of East Palm Canyon Drive (Highway 111) near its intersection with Canyon Plaza Drive in Cathedral City, Riverside County, California. Portions of the project site are also located in the City of Palm Springs and tribal lands of the Agua Caliente Band of Cahuilla Indians.

## Permit Conditions:

**General Conditions:**

1. The time limit for completing the authorized activity (construction only) ends on **September 14, 2015**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification from this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. The United States Environmental Protection Agency has issued a conditioned water quality certification for your project (Aug 27, 2012; EPA #368, copy attached). You must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of your permit.

**Special Conditions:**

Endangered Species Act:

1. This Corps permit does not authorize you to take any threatened or endangered species. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). Your authorization under this Corps permit is conditional upon your compliance with all of the required avoidance and minimization measures, which are incorporated by reference in this permit and further described

in Special Condition 2, below. Failure to comply with the required avoidance and minimization measures would constitute non-compliance with your Corps permit.

2. To mitigate for permanent impacts to 0.97 acre of non-wetland waters of the United States (WoUS) and temporary impacts to 0.52 acre of non-wetland WoUS, the Permittee shall provide a minimum of 2.04 acres of enhancement to WoUS consisting of exotic species removal and 0.78 acre of on-site debris removal. Prior to construction, the Permittee shall submit a final mitigation plan to the Corps Regulatory Division that stipulates how this minimum objective will be met. No work in waters of the United States is authorized until the Permittee receives, in writing (by letter or e-mail), Corps Regulatory Division approval of the final mitigation plan.

3. Prior to initiating construction in waters of the United States, the Permittee shall submit to the Corps Regulatory Division a complete set of final detailed grading/construction plans showing all work and structures in waters of the United States. All plans shall be in compliance with the Final Map and Drawing Standards for the Los Angeles District Regulatory Division dated September 21, 2009 (http://www.spl.usace.army.mil/ regulatory/pn/SPL-RG_map-drawingstandard_final_w-fig.pdf). All plan sheets shall be signed, dated, and submitted on paper no larger than 11x 17 inches. No work in waters of the United States is authorized until the Permittee receives, in writing (by letter or e-mail), Corps Regulatory Division approval of the final detailed grading/construction plans. The Permittee shall ensure that the project is built in accordance with the Corps-approved plans.

4. No debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, oil or petroleum products, from construction shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into WoUS. Therefore, the Permittee shall employ all standard Best Management Practices (as stipulated in the EIR/EA) to ensure that toxic materials, silt, debris, or excessive erosion do not enter WoUS during project construction.

5. Vehicles shall not be driven or equipment operated in waters of the United States on-site, except as necessary to complete the proposed project. The Permittee shall ensure that all vehicle maintenance, staging, storage, and dispensing of fuel occur in designated upland areas, located in such a manner as to prevent any runoff from entering WoUS.

6. Within 45 calendar days of completion of authorized work in waters of the United States, the Permittee shall submit to the Corps Regulatory Division a post-project implementation memo indicating the date authorized impacts to waters of the United States ceased.

Cultural Resources:

1. Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Archeology Staff within 24 hours (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861). The Permittee shall immediately suspend all work in any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project construction, per 36 C.F.R. section 800.13.

**Further Information:**

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).

(X ) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

PERMITTEE _____ DATE _____

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

James E. Mace
Senior Project Manager, South Coast Branch _____ DATE _____

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

TRANSFEREE _____ DATE _____

*LOS ANGELES DISTRICT*
*U.S. ARMY CORPS OF ENGINEERS*

# NOTIFICATION OF COMMENCEMENT OF WORK FOR DEPARTMENT OF THE ARMY PERMIT

**Permit Number:** *SPL-2011-01026-JEM*
**Name of Permittee:** *Riverside County Flood Control and Water Conservation District; Warren D. Williams*
**Date of Issuance:** *September 14, 2012*

**Date work in waters of the U.S. will commence:** _____
**Estimated construction period (in weeks):** _____
**Name & phone of contractor (if any):** _____

Please note that your permitted activity is subject to a compliance inspection by an Army Corps of Engineers representative. If you fail to comply with this permit you may be subject to permit suspension, modification, or revocation.

I hereby certify that I, and the contractor (if applicable), have read and agree to comply with the terms and conditions of the above referenced permit.

_____ _____
Signature of Permittee Date

At least ten (10) days prior to the commencement of the activity authorized by this permit, sign this certification and return it using any ONE of the following three (3) methods:

(1) E-MAIL a statement including all the above information to: James.E.Mace@usace.army.mil
OR
(2) FAX this certification, after signing, to: 951-276-6641
OR
(3) MAIL to the following address:

U.S. ARMY CORPS OF ENGINEERS
RIVERSIDE REGULATORY OFFICE
ATTN: JAMES MACE, SPL-2011-00244
1451 RESEARCH PARK DRIVE, SUITE 100
RIVERSIDE, CALIFORNIA 92507-2154

*LOS ANGELES DISTRICT*
*U.S. ARMY CORPS OF ENGINEERS*

# NOTIFICATION OF COMPLETION OF WORK AND CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

**Permit Number:** *SPL-2011-01026-JEM*
**Name of Permittee:** *Riverside County Flood Control and Water Conservation District; Warren D. Williams*
**Date of Issuance:** *September 14, 2012*

**Date work in waters of the U.S. completed:** _____
**Construction period (in weeks):** _____
**Name & phone of contractor (if any):** _____

Please note that your permitted activity is subject to a compliance inspection by an Army Corps of Engineers representative. If you fail to comply with this permit you may be subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of said permit.

_____ _____
Signature of Permittee Date

Upon completion of the activity authorized by this permit, sign this certification and return it using any ONE of the following three (3) methods:

(1) E-MAIL a statement including all the above information to: James.E.Mace@usace.army.mil
OR
(2) FAX this certification, after signing, to: 951-276-6641
OR
(3) MAIL to the following address:

U.S. ARMY CORPS OF ENGINEERS
RIVERSIDE REGULATORY OFFICE
ATTN: JAMES MACE, SPL-2011-00244
1451 RESEARCH PARK DRIVE, SUITE 100
RIVERSIDE, CALIFORNIA 92507-2154

# APPENDIX "I"

# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

# SECTION 401 PERMIT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

AUG 27 2012



US EPA File # 368
USACE File # SPL-2011-01026-JEM

Mr. Warren D. Williams
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92501

Subject: Conditional Clean Water Act Section 401 Certification for the Eagle Canyon Dam and Debris Basin, Riverside County, CA

Dear Mr. Warren:

The U.S. Environmental Protection Agency (EPA) received your application for Clean Water Act (CWA) 401 water quality certification for the Eagle Canyon Dam and Debris Basin, located at the mouth of Eagle Canyon, in Cathedral City and on tribal lands of the Agua Caliente Band of Cahuilla Indians (Agua Caliente Tribe). The project requires work in waters of the United States (WUS) and a CWA Section 404 Individual Permit (IP) from the U.S. Army Corps of Engineers (Corps). The Corps' permit requires a water quality certification under CWA Section 401. Because the Agua Caliente Tribe does not have "treatment as a state" status under the CWA and an EPA-approved certification program, EPA is required to issue the 401 certification on their behalf.

EPA Coordination

In accordance with the May 4, 2011 *EPA Policy on Consultation and Coordination with Indian Tribes*, we sought to consult with the Agua Caliente Tribe by letter dated September 22, 2011 (attached). We did not receive any input from the Agua Caliente Tribe on this action beyond verbal support for the project in general. The EPA has also been coordinating with the Los Angeles District of the U.S. Army Corps of Engineers Regulatory Division and representatives of the Riverside County Flood Control and Water Conservation District (applicant) for the past year to identify avoidance, minimization and compensatory mitigation measures for the project. We appreciate the efforts of the applicant to develop and consider additional alternative designs for the proposed project.

Eagle Canyon

Eagle Canyon is an ephemeral wash that drains a relatively small watershed in the San Jacinto Mountains and discharges into a wash and vacant land between Perez Road and Canyon Mountain Drive. Flows disperse across downstream properties and during heavy rainfall, floodwaters, mud, and debris flow have damaged downstream structures in Cathedral City and along Highway 111. Eagle Canyon is underlain by gravel pits that were subsequently used for illegal dumping and a shooting sports arena. Eagle Canyon provides localized sediment transport and flood attenuation functions as well as groundwater recharge and wildlife habitat though not for any listed species.

Project Description

The Riverside County Flood Control and Water Conservation District (the "Applicant") proposes to construct a dam and debris basin at the mouth of Eagle Canyon where it drains a small portion of the San Jacinto Mountains. The purpose of the project is to provide flood detention and flood hazard mitigation for the developed portion of Cathedral City located downstream of the project site. The proposed project would also include ongoing maintenance of the dam, sediment debris basin, and underground storm drain. The project includes the following activities:

- Site remediation activities to remove lead impacted soil from past shooting range activities, removal of an underground storage tank, and the export of illegally dumped fill and debris.
- Excavation of the debris basin to store sediments from Eagle Canyon.
- Excavation of locally sourced clean materials to construct an un-gated, 53-foot high earthen dam that would hold water for brief periods following significant flood events.
- Construction of a concrete and rock emergency overflow spillway and stilling basin that would allow water to pass safely over the dam in the event design storage volume (100-year storm) is exceeded and to dissipate downstream flows before they spread out over the natural valley.
- Construction of an intake structure and a 42-inch concrete outlet pipe that would convey flows to an earthen channel at Via Allegro Street that would eventually drain to the North Cathedral Canyon Channel.
- Unpaved maintenance access roads.
- Maintenance activities including regular inspections of the dam and other facilities, annual removal of accumulated sediment and debris from the basin, and as needed removal of any blockages to the spillway.

Project Impacts

The Project will result in permanent impacts to 0.97 acre of WUS from fill associated with the dam and constructing the basin, and 0.52 acre of temporary impacts to WUS from construction activities within Eagle Canyon.

Compensatory Mitigation

The applicant has submitted the July 12, 2012 *Conceptual Mitigation Approach for Jurisdictional Impacts associated with the Construction of Eagle Canyon Dam*. To compensate for impacts to WUS in Eagle Canyon, the applicant will conduct on-site enhancement activities immediately upstream of the project construction footprint, and in Tahquitz Canyon located approximately 5 miles from the project site and within the same watershed. A suitable mitigation bank or in lieu fee option is not currently available. Enhancement activities will consist of removal of invasive fountain grass (*Pennisetum setaceum*), including 0.15 acre in Eagle Canyon and 1.89 acres in the Tahquitz Canyon Channel. Mitigation for temporary impacts to WUS will consist of debris removal from a 0.78 acre area of Eagle Canyon, where illegal dumping has occurred for several years. In order to comply with the Corps and EPA 2008 Compensatory Mitigation Rule, the applicant must submit a mitigation plan to the Corps for approval and incorporation into the IP by reference as described in 33 CFR Part 332.4(c). This plan will need to include elements described in paragraphs (c)(2) through (c)(14) including mechanisms for long-term site protection, long-term management, and monitoring of performance criteria to ensure the mitigation sites are sustainable in the future.

Certification

We hereby grant water quality certification provided the following conditions are adhered to during all phases of the project:

1) The Applicant shall comply with the terms and conditions of the 404 permit.

2) The duration of this certification is equivalent to that of the 404 permit.

3) The Applicant is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities.

4) The Project shall be constructed in conformance with the project description provided in the application. Any material changes to these plans must be submitted to EPA for review and approval before the changes are implemented.

5) The project will not result in greater than 0.97 acre of permanent impacts and 0.52 acre of temporary impacts to WUS. This certification is contingent upon EPA approval of the final compensatory mitigation plan.

6) The applicant shall minimize clearing, grubbing, scraping, or otherwise exposing erodible surface. Ground disturbance and vegetation removal and/or cutting shall not exceed the minimum necessary to complete the project.

7) Sediment control, erosion control, and/or bank protection measures shall be installed prior to commencement of any ground disturbing activities and shall be maintained during construction and post-construction.

8) All activities and BMPs shall be implemented according to the submitted application and the conditions of this certification.

9) To minimize sedimentation and sediment transport, no work shall occur within areas where flowing and/or standing water is present. Additionally, in-channel work shall not be performed during or immediately following high flow events.

10) Temporary structures, including but not limited to staging areas, berms, dikes, and pads shall be constructed so as to resist erosion by high flow events.

11) Except as specified in the application, no debris, silt, sand, cement, concrete, oil or petroleum, organic material, or other construction related materials or wastes shall be allowed to enter into or be stored where it may be washed by rainfall or runoff into WUS.

12) The Applicant must designate area(s) for equipment staging and storage located entirely outside WUS. All equipment must be inspected for leaks prior to use in WUS and all leaks shall be repaired and equipment cleaned to remove fluid residue prior to use in WUS.

13) The Applicant shall have a spill containment plan onsite to ensure that pollutants are prevented from entering WUS. The applicant must designate area(s) entirely outside WUS for chemical and

petroleum or oil storage. A spill response kit will be maintained in this (these) area(s) to mitigate any spills.

14) All temporary fills shall be removed in their entirety. Any excess materials must be appropriately disposed of outside of jurisdictional waters.

15) If, at any time, an unauthorized discharge to WUS occurs, or any water quality problem arises, the associated project activities shall cease immediately until adequate BMPs are implemented. EPA shall be notified promptly after the unauthorized discharge or water quality problem arises.

16) A copy of this certification shall be provided to all contractors and subcontractors and shall be filed on site during construction and operation of the project.

Thank you for your ongoing coordination on this project. We look forward to continuing to work with you and the Corps on finalization and approval of the mitigation plans. If you have questions regarding this certification, please call me at (415) 972-3483 or contact Paul Amato at (415) 972-3847 or amato.paul@epa.gov.

Sincerely,

Jason Brush
Supervisor
Wetlands Office

Attachment:
September 22, 2011 Consultation Letter with the Agua Caliente Tribe

cc: Mr. James Mace, LA District, USACE Regulatory
Mr. Wesley Salter, RBF Consulting
Mr. Jay Mirpour, Santa Anna Regional Water Quality Control Board
The Honorable Richard Milanovich, Chairman, Agua Caliente Band of Cahuilla Indians

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

SEP 22 2011

The Honorable Richard Milanovich
Chairman
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palm Springs, CA 92264

Attention: Margaret Park, Environmental Director

Subject: Opportunity for Consultation and Coordination on EPA Actions

Dear Chairman Milanovich:

With this letter, the U.S. Environmental Protection Agency Region 9 (EPA) is informing you of two upcoming actions that may affect your tribe, and which are appropriate for government-to-government consultation, per the *EPA Policy on Consultation and Coordination with Indian Tribes*, dated May 4, 2011. Our consultation policy requires that we consult with you when EPA actions or decisions may affect tribal interests. When consultation is initiated by our office, it will be conducted in accordance with the *EPA Policy on Consultation and Coordination with Indian Tribes found on-line at* http://www.epa.gov/indian/pdf/cons-and-coord-with-indian-tribes-policy.pdf.

EPA Actions:

1) Clean Water Act (CWA) §401 Certification for the U.S. Army Corps of Engineers (Corps) CWA §404 authorization, currently under consideration, for the Cathedral Canyon Bridge Project, Cathedral City, CA. The project proposes to replace an existing road crossing with a new bridge across the Whitewater River to alleviate flooding and improve vehicle and pedestrian access.

2) CWA §401 Certification for the Corps CWA §404 authorization, currently under consideration, for the Eagle Canyon Dam and Debris Basin Project, Palm Springs and Cathedral City, CA. The project proposes to build a dam and debris basin in Eagle Canyon.

When a proposed activity requires a federal license or permit, such as a CWA §404 authorization from the Corps, CWA §401 requires a government certification that the activities will protect water quality if there is the potential for discharges into streams, wetlands, or other waters of the U.S. This certification is performed by a state agency, territory or tribe that has §401 certifying authority. The federal government (EPA) must otherwise issue these certifications. The Agua Caliente Band of Cahuilla Indians does not have certifying authority; therefore EPA is responsible for certifying or denying these Corps authorizations, if they are issued.

If you elect to have EPA consult with your tribe, EPA will contact you to initiate consultation. EPA will inform you of our intended certification actions and any special conditions, in advance, regardless of a formal consultation process.

Please provide a letter or email response to Paul Amato at:

Paul Amato
Water Division (WTR-8)
U.S. EPA, Region 9
75 Hawthorne
San Francisco, CA 94105
Amato.paul@epa.gov

no later than October 14, 2011. If we do not receive your response by this date, we will consider this to mean you do not wish to consult. If you have any questions about the proposed actions, please contact Paul at amato.paul@epa.gov or (415) 972-3847 by October 14, 2011. If you have general questions regarding EPA consultation requirements, please feel free to call Kristin Gullatt, Manager of our Water Tribal Office, at gullatt.kristin@epa.gov or (415) 972-3432.

Sincerely,

Jason Brush
Supervisor
Wetlands Office

cc
Mr. Dan Malcolm,
AICP, Senior Planner
5401 Dinah Shore Drive
Palm Springs, CA 92264

# APPENDIX "J"

# TEMPORARY CONSTRUCTION EASEMENT (TCE)

Eagle Canyon 2012 TCE

Epoch 2000.35

Combination Factor 0.99997054

| | | | |
|---|---|---|---|
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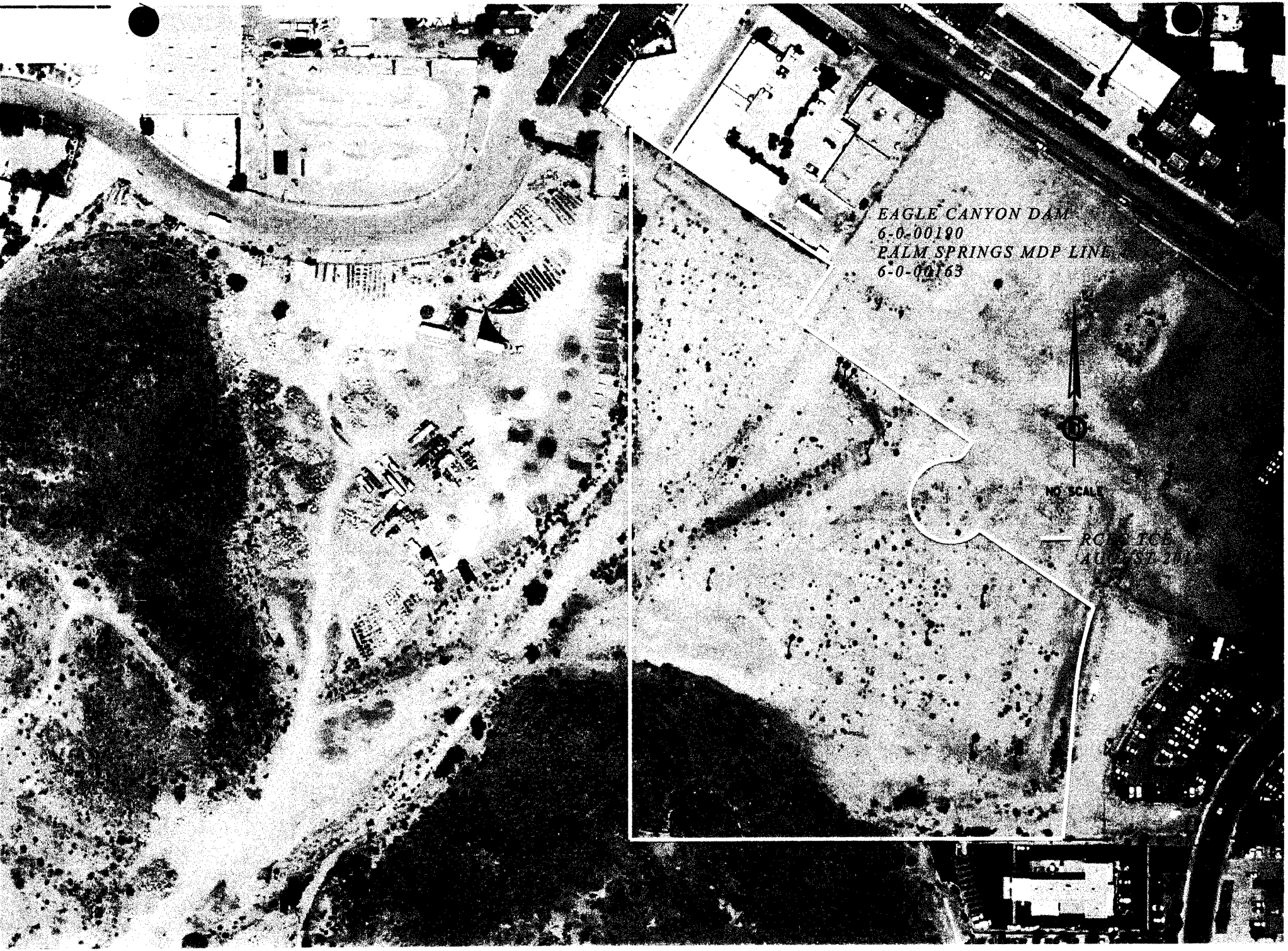
| 333 | 2229661.564 | 6491821.869 | 0.000 |
| 405 | 2228691.682 | 6492409.679 | 0.000 |
| 406 | 2228892.864 | 6492427.278 | 0.000 |
| 415 | 2228850.826 | 6492907.823 | 0.000 |
| 615 | 2229473.743 | 6492097.373 | 0.000 |
| 616 | 2229399.667 | 6492046.398 | 0.000 |
| 617 | 2229233.653 | 6492287.646 | 0.000 |
| 618 | 2229220.225 | 6492278.405 | 0.000 |
| 619 | 2229233.830 | 6492258.634 | 0.000 |
| 620 | 2229209.831 | 6492258.507 | 0.000 |
| 621 | 2229153.831 | 6492258.208 | 0.000 |
| 622 | 2229113.927 | 6492297.498 | 0.000 |
| 624 | 2229144.401 | 6492203.008 | 0.000 |
| 625 | 2229007.811 | 6492451.702 | 0.000 |


EAGLE CANYON DAM
6-0-00190
PALM SPRINGS MDP LINE
6-0-00163
NO SCALE