CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

CHOLLAS CREEK DIAZINON TOTAL MAXIMUM DAILY LOAD

"RESPONSES TO COMMENTS #1"

August 14, 2002

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

RESPONSE TO PUBLIC COMMENTS

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June 12, 2002

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Response to Public Comments
Chollas Creek Diazinon Total Maximum Daily Load

1. Clean Water Act Section 303(d) List does not Include Chollas Creek for Diazinon

Comment: Karen Henry, City of San Diego
The City has concerns regarding the procedural process for this proposed Basin Plan amendment. In 1998, Chollas Creek was placed on the federal 303(d) list as a water quality limited segment for Cadmium, Copper, High Coliform Count, Lead, Toxicity, and Zinc. The Regional Board's proposed 2002 303(d) list includes Chollas Creek on the Watch List for Total Chlordane, Total PCBs, trash and sediment. It appears that this TMDL was prepared for a pollutant that is not on the existing or proposed 303(d) lists.

Comment: Gary Erbeck, County of San Diego
The proposed TMDL is not supported by a CWA section 303(d) listing for diazinon. While SDRWQCB staff may feel that the nexus between measured diazinon levels and observed toxicity has been adequately demonstrated, this relationship should be properly vetted in a public review process. We urge you not to move forward on this TMDL until a 303(d) listing has been properly established for diazinon.

RWQCB Response:
It is appropriate and fully consistent with federal regulations that the Regional Board has developed a "TMDL for diazinon" to address a "303(d) listing for Toxicity". Toxicity is an "impairment condition" and diazinon is the "causitive pollutant" (i.e., the pollutant causing the listed impairment). TMDLs are not written for impairment conditions. They are written instead for the underlying pollutant(s) that is responsible for the impairment. This is because the imparment can not be eliminated/reduced until the causative pollutant is eliminated/reduced.

When the caustive pollutant(s) is known, the TMDL is simply written to reduce that pollutant and the first step in TMDL development is to refine one's understanding of the pollutant in the water body. In the case of Rainbow Creek for example, which is impaired for eutrophiciation, the proposed TMDL is written to reduce nitrogen and phosophorus because nitrogen and phospurs are the known causes of eutrophication in Rainbow Creek. If however the pollutant(s) causing the listed impairment is unknown, as in the case of Chollas Creek, the first step in TMDL development must be identification of the underlying cause(s). In fact, the first step in any evauation of toxicity is always to identify the polluatnt(s) causing the etoxicity and then to direct reduction efforts towards that pollutant(s).

During the past several years, monitoring data collected pursuant to the San Diego Municipal Storm Water Permit (MS4 permit) has consistently revealed toxicity in Chollas Creek during storm events. This data served as the basis for the Regional

Board's 1996 addition of Chollas Creek to its Clean Water Act Section 303(d) list of impaired waters. Specifically, Chollas Creek is listed for "toxicity in storm water". Consistent with the federal requirement for States to develop TMDLs for section 303(d) listed waters, staff began work on a TMDL for Chollas Creek in the late 1990s. The initial step in the TMDL development process was to identify the cause of toxicity. This was accomplished by way of Toxicity Identification Evaluations (TIEs) which revealed that toxicity in Chollas Creek during storm events was due to metals and to the common household pesticide, diazinon. With that information, staff focused one TMDL on diazinon and initiated a separate TMDL to address metals in Chollas Creek. When the reduction of diazinon and metals mandated by these TMDLs has been achieved, toxicity in Chollas Creek will also be reduced and likely eliminated as a cause of impairment. |

2. Phased Schedule of Compliance is Needed

Comment: Karen Henry, City of San Diego
The implementation plan calls for immediate compliance with diazinon numeric effluent limitations (i.e., a 90% reduction in diazinon concentrations). The proposed implementation schedule does not correspond to the EPA phase-out of diazinon and does not follow the federal regulations and guidelines that recommend a "phased" approach to pollution reduction. The City of San Diego cannot be expected to achieve this reduction immediately upon the approval of this proposed Basin Plan amendment.

Comment: Ed Kimura, Sierra Club
The current federal TMDL program does not specify the time period to achieve the TMDL for an impaired water body. However, the pending TMDL program sets, in general, a ten-year schedule. The four-year phase out schedule for diazinon and the anticipated stockpiling of this pesticide prior to the phase out presents a real challenge to meet the diazinon numeric target within ten years. We strongly recommend that the RWQCB and the copermittees work to achieve the ten-year time period to achieve the diazinon numeric targets for Chollas Creek.

RWQCB Response:
The need for a phased schedule of compliance was the single most important issue raised by the City of San Diego in opposition to the proposed TMDL. Regional Board staff has recently met with each of the responsible parties and stakeholders to solicit their concerns regarding the proposed TMDL, and in particular, to discuss potential compliance schedules. As a result of these meetings, all parties have agreed to work together to develop a mutually acceptable phased schedule of compliance with the diazinon numeric effluent limitations. The schedule will be developed over the next year [during the time when the TMDL is undergoing review and approval by the State Water Resources Control Board (SWRCB), Office of Administrative Law (OAL), and United States Environmental Protection Agency (USEPA)]. By allowing the development of the schedule over the course of the

upcoming year, stakeholders will be able to take advantage of incoming information about the affects of USEPA's ongoing diazinon manufacture and use phase-out.

The final compliance schedule will be incorporated into the appropriate NPDES storm water permits at the time the permits are modified to include numeric effluent limitations or receiving water limitations for diazinon in accordance with the TMDL. The proposed permit limitations for diazinon and the terms of the compliance schedule for attaining those limitations will be considered by the Regional Board during the public hearing for adoption of the revised permits.

The TMDL and Basin Plan amendment have been modified to provide a phased compliance schedule for attaining numeric permit limitations for diazinon and to make clear that all other aspects of the implementation plan are effective immediately (upon approval by the SWRCB, OAL, USEPA and subsequent incorporation into the appropriate storm water NPDES permits). The City of San Diego is supportive of this approach and will participate in the development of the phased compliance schedule.

3. Why is a TMDL Needed in Light of USEPA's Phase-Out?

Comment: Gary Erbeck, County of San Diego
The propriety of continuing with this diazinon TMDL as proposed in light of the USEPA's national ongoing diazinon phase-out and elimination program would set a misdirected precedent for the San Diego Region. The USEPA phase-out will likely achieve the desired reductions of diazinon in this watershed over time. Adding a TMDL on top of those controls will likely add nothing of substantive value. The SDRWQCB should therefore utilize these planned controls prior to the establishment of numeric targets and the assignment of load allocations through the TMDL process.

Instead of mandating programs and activities that are clearly duplicative, the ASDRWQCB should look for ways to build on the USEPA phase-out by developing solution with those will be tasked with their implementation.

RWQCB Response:
It is appropriate and entirely consistent with the federal Clean Water Act and applicable TMDL regulations for the RWQCB to adopt a TMDL for diazinon in the Chollas Creek watershed despite USEPA's phase out and elimination program. Similar TMDLs for diazinon are currently under development in RWQCBs 2, 5, and 8. This TMDL is consistent with each of the other RWQCB's diazinon TMDLs with respect to overall approach and selection of the DFG's Water Quality Criteria as Numeric Targets.

RWQCB's Legal Obligation
The RWQCB has a legal obligation under the Clean Water Act to adopt a TMDL for

all water bodies such as Chollas Creek identified as not meeting water quality standards under Section 303(d).

Chronology of Events

The RWQCB initiated development of the TMDL for Chollas Creek in late 1998. In November 1999, the results of the Toxicity Identification Evaluation (TIE) Analyses revealed diazinon, in addition to metals, as the causative pollutants responsible for measured aquatic toxicity in Chollas Creek. With that information the RWQCB focused the TMDL on diazinon and initiated a separate TMDL to address metals in Chollas Creek. In December of 2000 USEPA announced its decision to initiate phase-out of diazinon manufacture and use.

Comparison of USEPA Phase-out to RWQCB TMDL

The RWQCB's TMDL has been written to be fully consistent with and complementary to the goals of the USEPA's phase out. The activities required under the TMDL will support and augment USEPAs phase out. The USEPA phase-out is the single most important mechansm to implement the diazinon wasteload reductions required by this TMDL. However, despite the apparent overlap, the two actions have a different purpose, emphasis, time frame and geographic scope.

USEPA's nationwide diazinon phase-out prohibits the manufacture and sale of diazinon over time. The RWQCB's TMDL establishes numeric limitations for diazinon in Chollas Creek that will restore beneficial uses and requires implementation of pollution prevention and source control Best Management Practices (BMPs) specifically designed to reduce the discharge of diazinon in the Chollas Creek watershed. The major focus of the RWQCB's TMDL is on public education with the goal of reducing diazinon useage, increasing proper disposal, and encouraging the use of less toxic alternatives. The TMDL also requires comprehensive monitoring to ensure that implementation measures result in significant reductions of diazinon concentrations and toxicity levels in Chollas Creek over time.

Time Frames

This TMDL should result in attainment of water quality standards in Chollas Creek sooner than would otherwise be expected under USEPA's phase-out program alone. USEPAs phase-out is scheduled to occur over a period of several years beginning in March 2001 and continuning on for a number of years until urban and agricultural production and useage are significantly curtailed. It is anticipated that an increase in diazinon sales and useage may occur in the early stages of the phase-out due to factors such as possible retail price mark down and consumer stockpiling. The activities required by this TMDL are intended to reduce diazinon discharges during and immediately following USEPAs diazinon phase-out. For example the City of San Diego and the County of San Diego informed the RWQCB of their plans to initiate a countywide pesticide education program in late summer of 2002.

Reduction of Other Pesticides

The USEPA phase-out prohibitions apply solely to diazinon. An increase in the use of alternative pestisides is a potential unwanted consequence of the diazinon phase-out. Alternative pesticides may pose an equal or greater toxicity threat to Chollas Creek. It is expected that the implementation measures required under the RWQCB TMDL will result in the reduction of pesticide use in general throughout San Diego County. Although not specificaly required by the TMDL, the City of San Diego's and the County of San Diego's proposed pesticide education program will be broad based and county-wide. The program will address pesticide useage and disposal in general and will not be limited to diazinon in Chollas Creek.

To address the replacement pesticide issue, this TMDL implementation plan promotes source reduction through an IPM approach to pest control. If widely adopted, this should lead to an over all reduction of pesticide use because: (1) it is an approach that avoids the immediate impulse to apply pesticides; (2) it employs sanitation, physical and biological controls, and good housekeeping and horticultural practices first; and (3) application of pesticides is a last resort, and the pesticides considered first would be the pesticide considered to be the least damaging to the environment and human health.

4. Implementation Plan is Redundant with City of San Diego's Current Activities

Comment: Karen Henry, City of San Diego

The City of San Diego is committed to improving water quality and has already initiated efforts toward policy decisions, education and outreach, improvement projects and pesticide monitoring. Many of these activities are on going, while others aspects are still being developed. The City believes these activities have similar goals, objectives and eventually, the same outcome as the proposed TMDL implementation plan. Therefore, the implementation plan activities have already been implemented under existing programs.

RWQCB Response:

The RWQCB agrees. The RWQCB appreciates and commends the City's efforts towards early implementation of this TMDL.

The requirements under the City's MS4 permit and the requirements under the Chollas Creek Diazinon TMDL are fully consistent. All of the activities required by the TMDL are already required under the City's MS4 permit. However the City will be required to do more under the TMDL.

The purpose of a TMDL is to focus additional attention on a particular water quality problem. In this case the City is directed to focus its pollution reduction efforts on a single pollutant, diazinon in a single watershed, Chollas Creek. Most importantly, the TMDL requires the incorporation of specific numeric limitations for diazinon into the MS4 permit designed to restore the beneficial uses of Chollas Creek. While by

design, the goals and strategies of the TMDL and the City's existing efforts under the MS4 permit overlap; this does not obviate the legal necessity for the TMDL.

5. Peer Review Comments were not addressed

Comment: Gary Erbeck, County of San Diego
The RWQCB has not adequately addressed the comments received from peer reviewers, most notably those of Dr. Tjeerdema regarding the fate and transport of diazinon in the Creek and those of Dr. Schlenk regarding the need for an ecological risk assessment.

Comment: Karen Henry, City of San Diego
The peer review request of Dr. Tjeerdema to model the fate and transport of diazinon in Chollas Creek was not addressed. The fate and transport model conducted by TDC Environmental for the Dept. of Pesticide Regulation should be considered.

RWQCB Response:
The RWQCB's written responses to the peer review comments are contained in Attachment E-4 of the April 26, 2002 technical report for the Chollas Creek TMDL. All peer review comments resulted in changes, corrections, clarifications or additions to the RWQCB's TMDL technical report.

On the topics of fate and transport and ecological risk assessment, the RWQCB agrees that the responses provided to the peer reviewers were not comprehensive and sufficently detailed. The peer reviewers did not request that the RWQCB conduct a site specific fate and transport study of diazinon in Chollas Creek or an ecological risk assessment. Rather the peer reviewers suggested that the RWQCB consider information from existing diazinon ecological risk assessments and fate and transport studies in developing this TMDL. The RWQCB has considered this information and where appropriate has incorporated this information into the technical report. Information on these topics is also included below and elsewhere in this response to comments document.

The RWQCB has reviewed USEPA's human health and ecological risk findings contained in the Diazinon HED Chapter for the Reregistration, Elegibility and Decision Document, dated December 2000 and EFED RED Chapter for Diazinon dated November 16, 2000. The RWQCB has also considered the following three studies on diazinon fate and transport:

USEPA's revised Environmental Fate and Effects Division (EFED) Chapter for Diazinon, November 16, 2000

Fate And Effects Of Diazinon, Daniel Larkin and Ronald Tjeerdema, 2000.

Diazinon & Chlorptrifos Products: Screening for Water Quality Implications, TDC Environmental, May 15, 2001.

There are important and complex risk assessment and fate and transport considerations. In essence diazinon is highly toxic and poses significant ecological and human health risks. There are numerous exposure pathways and routes by which diazinon can find its way into surface waters. Diazinon breaks down into several degratory products some of which are more toxic than the parent compund. Sediments may serve as a sink or source of diazinon in aquatic systems. It is for these reasons that USEPA initiated its nationwide phase-out program.

This TMDL does not directly address all of the complexities related to diazinon risk assessment and fate and transport in Chollas Creek. However in the broadest sense, reduction of diazinon in the watershed – the goal of this TMDL – will also result in corresponding reductions of the risks and adverse effects associated with diazinon fate and transport.

Development of a sediment TMDL is currently underway to address benthic community degradation at the mouth of Chollas Creek in San Diego Bay. Information obtained during the development of this TMDL may increase the RWQCB's understanding of diazinon fate and transport in Chollas Creek sediments. Studies underway are being jointly conducted by the U.S. Navy and the RWQCB and are directed towards assessment of sediment contamination for organics and metals, toxicity, benthic community composition and bioaccumulation.

Interested persons may access the USEPA's ecological risk assessment and fate and transport studies for diazinon at <http://www.epa.gov/pesticides/op/diazinon. Additional information is also contained in the following:

Arthur, J. W., J.A. Zischke, K.N. Allen, and R.O. Hermanutz. 1983. Effects of diazinon on macroinvertebrates and insect emergence in outdoor experimental channels. Aquatic Toxicology, 4: 283-301.

Cooper, A. 1996. Diazinon in Urban Areas. Prepared for Regional Water Quality Control Plant, City of Palo Alto, California. 78 pp+ appendices.

Feng, A. and J. Scanlin. 2001. Runoff of Diazinon from Paved Plots and Test Sites: Summary of Results. Prepared for the Alameda County Flood Control and Water Conservation District. Submitted to the California Department of Pesticide Regulation. 13 pp + appendices. <http://www.cdpr.ca.gov/docs/surfwatr/surfmenu.htm>.

Van Der Geest, H.G., G.D. Greve, E.M De Haas, B.B. Scheper, M.H.S. Kraak, S.C.Stuijfzand, K.H. Augustijn, and W. Admiraal. 1999. Survival and behavioral responses of larvae of the caddisfly Hydropsyche angustipenis to copper and diazinon. Env. Tox. and Chem. 18(9):1965-1971.

6. Insufficient Scientific Basis

Comment: Karen Henry, City of San Diego

The City has specific concerns related to the scientific foundation of the proposed TMDL. The TMDL was initiated based upon a limited data set. Only 3 storm events

were monitored for the Toxicity Identification Evaluation (TIE) and only 2 of those indicated toxicity. TIEs indicated organophosphate pesticides to be the probable source of toxicity.

RWQCB Response:
Data collected over 6 seasons between 1998 and 2001 consistently exhibited chronic toxicity to the freshwater invertebrate *Ceriodaphnia dubia* (water flea) in laboratory bioassay tests. This species is native to southern California and is a good representative of the aquatic wildlife present in Chollas Creek. The original TIE offered strong support for diazinon as being the principal cause of toxicity to *C. dubia*. While only 3 storm events were used for the TIE, the similarity of toxic responses and chemical concentrations indicate these events were similar to the storm events monitored over the previous six seasons. Based on this compelling evidence the RWQCB focused the TMDL towards reducing concentrations of diazinon in Chollas Creek watershed. Additionally the findings of a recent report addressing toxicity in Chollas Creek during the period 1999-2001 support the basis of the TMDL (MEC Analytical Systems, 2002). This report found a statistically significant correlation between toxicity in *Ceriodaphnia dubia* (water flea) to diazinon concentrations in Chollas Creek, thereby confirming the initial findings of the RWQCB's TIE.

7. Insufficient Public Participation and Time for Public Review

Comment: Karen Henry, City of San Diego
The City has concerns regarding the public participation requirement of this proposed TMDL. To date there have been four workshops held regarding this issue. The first three workshops were held in 1998 and 1999. Recently, the fourth workshop was held on May 17, 2002. Public participation is a federally mandated component of the TMDL process. However, the Regional Board has not encouraged public participation. The City feels the current timeline provides very little opportunity for public participation and interaction in this process. They recommend that the Regional Board staff facilitate discussion between all stakeholders to develop the implementation plan for the proposed TMDL.

Comment: Gary Erbeck, County of San Diego
We strongly urge the SDRWQCB to direct its staff to reopen the public participation process to better address the knowledge and experience of affected stakeholders.

RWQCB Response:
The RWQCB disagrees. Legal public notice requirements have been fully satisfied and numerous opportunities for public participation have been provided as described below.

Public Notice Requirements

Federal Clean Water Act regulations (40 CFR 25.5) require the Regional Board to mail notice of a proposed Basin Plan amendment to all interested parties at least 45 days in advance of the public hearing. State CEQA regulations (23 California Code of Regulations Section 3777) require the Regional Board to make a draft TMDL report (which is a CEQA substitute) available for public comment for at least 45 days in advance of the public hearing. The Notice of Public Hearing for this Basin Plan amendment was posted 54 days in advance of the public hearing (April 19 to June 12). The draft technical report (including the draft Resolution and draft Basin Plan amendment) was available to the public for 45 days in advance of the public hearing (April 28 to June 12). The following actions were taken to fully satisfy all public notice requirements:

Notice of Public Hearing and Notice of Filing

- Mailed to RWQCB agenda mailing list on April 19, 2002
- Posted on RWQCB website on April 19, 2002
- Published in San Diego Union Tribune on April 24, 2002
- Mailed to interested parties list on April 24, 2002

Draft Technical Report (including Draft Resolution and Basin Plan Amendment)

- Posted on RWQCB website on April 28, 2002
- E-mailed to interested parties list on April 29, 2002
- Mailed to interested parties list on April 29, 2002

Public Participation Opportunities

Four public workshops were conducted by the Regional Board on March 17, 1999, August 3, 1999, December 17, 1999 and May 17,2002 and have served to encourage public participation. Between the third and fourth workshop Regional Board staff occasionally met with City staff to discuss the City's Integrated Pest Management Program for potentially application to the Chollas Creek watershed and progress on the TMDL. In addition, starting in 1999, the RWQCB began posting various elements of the draft TMDL as they were completed on the RWQCB's website for public review.

More recently, RWQCB staff conducted a series of four meetings (May 27, June 4, June 5, and June 10, 2002) with representatives of the Cities of San Diego, La Mesa and Lemon Grove, the County of San Diego, BayKeeper, the Sierra Club, the Port District of San Diego, Caltrans, the Navy and NASSCO. (Environmental Health Coalition was invited but was unable to attend.) These meetings were designed to afford all interested parties and stakeholders the chance to communicate their concerns with the proposed TMDL. As a consequence of these meetings, all parties have agreed to work collaboratively in developing a phased compliance schedule for meeting numeric limitations for diazinon.

8. TMDL is not Implementable, Scientifically Valid, or Technically Feasible

Comment: Gary Erbeck, County of San Diego
To achieve real progress, strategies must be identified that are implementable, scientifically valid, and technically feasible. As currently proposed, the TMDL appears to fall short of this standard. …..Based on the foregoing, we recommend that the SDRWQCB delay action the proposed TMDL until these concerns can be adequately addressed.

RWQCB Response:
The RWQCB disagrees. All of the implementation plan elements of the proposed TMDL are pragmatic and technically feasible. See response to Comment 6 regarding the scientific validity/basis of the TMDL. The USEPA phase-out of diazinon is underway. The USEPA phase-out is not likely to be protective of beneficial uses in Chollas Creek for many years. Implementing education and outreach as soon as possible, is the best way to meet the proposed diazinon numeric limitations and to reduce toxicity.

The pollution prevention and source control BMPs emphasized by the TMDL expand upon currently existing requirements of the MS4 permits to ensure that diazinon toxicity in Chollas Creek is controlled. These measures are either already underway or currently being planned. Without the added benefit of this TMDL, specific implementation activities to address diazinon toxicity in Chollas Creek will be delayed. Collectively the implementation measures of this TMDL will result in the reduction of diazinon concentrations and related toxicity in the Chollas Creek watershed.

The RWQCB will work with responsible parties and stakeholders to develop a compliance schedule for attaining the numeric limitations for diazinon. Plans are underway to hold a series meetings on the specifics of the compliance schedule.

9. Appropriateness of Beneficial Uses

Comment: Karen Henry, City of San Diego
The designated beneficial uses of Chollas Creek may not be appropriate. There appears to be no evidence that the WILD and WARM beneficial uses even exists in Chollas Creek. All currently designated beneficial uses of Chollas Creek should be reviewed.

RWQCB Response:
The beneficial use designations for Chollas Creek are not under review in the RWQCB's current consideration of this TMDL. The RWQCB has a legal obligation to ensure that this TMDL will achieve the restoration of the WARM and WILD beneficial uses designated in the Basin Plan for Chollas Creek. The review of beneficial uses designated for a waterbody could be scheduled as a separate action in a process known as the RWQCB's triennial review.

Federal law (Clean Water Act Section 303(c)(1)) requires that surface water standards, including beneficial uses designated in the Basin Plan be reviewed every three years. The California Water Code Section 13170 requires that the Regional Board periodically review the Basin Plan to determine if revisions are needed. Because it is conducted approximately every three years, this review process is termed the "Triennial Review". During the Triennial Review, the Regional Board develops a prioritized list of water quality issues which describes the Regional Board's schedule for consideration of Basin Plan amendments over the next three years.

Even without a comprehensive assessment of the fauna of Chollas Creek, aquatic life and aquatic dependent wildlife have been observed in and along the creek. Both of these ecosystem categories are vulnerable to diazinon and are considered part of the WARM and WILD beneficial uses.

10. Protection of Higher Trophic Levels from Diazinon Exposure

Comment: Ed Kimura, Sierra Club
The staff report does not provide data to show that these numeric targets protect the wildlife (mammals and birds) that can be exposed to the toxin via dermal and oral pathways as they forage in the riparian habitat of Chollas Creek. Diazinon biomagnifies in aquatic animals with bioconcentration factors below one to over 2000, dependent on the species. This fact can put foraging mammals and birds, being higher in the food chain, at unacceptable risks from the toxic effects of diazinon.

RWQCB Response:
The numeric targets for aquatic life in Chollas Creek are 0.05 ug/L diazinon for chronic exposure and 0.08 ug/L diazinon for acute exposure. These numeric targets for diazinon in Chollas Creek are considered to be protective of wildlife as follows:

- The selected numeric targets for diazinon are the most stringent concentration-based values for freshwater. The Regional Board has selected the lowest recommended values from the California Department of Fish and Game (DFG) water quality criteria as the best water quality indicator for diazinon. Also, the DFG water quality criteria itself incorporates conservative assumptions, as the DFG water quality criteria evaluated recent diazinon research data on toxicity utilizing highly sensitive species (e.g., Ceriodaphnia dubia and Daphnia magna) as well as other freshwater aquatic species.

- According to USEPA, diazinon residues accumulated in bluegill sunfish exposed to 2 parts per billion (ppb) of diazinon, with maximum mean bioconcentration factors of 542x, 583x and 542x for edible, nonedible and whole fish tissues respectively [<http://www.epa.gov/pesticides/op/diazinon/risk_oct2000.pdf> page 33]. The

depuration (loss from the tissue) was rapid. About 96% to 97% of the diazinon residues depurated from the fish after 7 days [<http://www.epa.gov/pesticides/op/diazinon/risk_oct2000.pdf> page 33]. Once targeted diazinon water quality objectives are met, the small levels that may accumulate in fish tissue are expected to rapidly depurate. Therefore, diazinon from surface water sources in not expected to pose a threat to fish nor to biomagnify in animals that may feed upon fish (e.g. birds).

- As noted, diazinon is very highly toxic to birds (e.g., mallard duck). As little as one diazinon granule has been known to kill birds that ingest gravel sized granules and which may mistake a diazinon granule for gravel. The "No Observed Adverse Effects Level" (NOAEL) for the mallard duck is approximately 0.316 millgrams active ingredient per kilogram duck (0.316 mg a.I./kg). [<http://www.epa.gov/pesticides/op/diazinon/risk_oct2000.pdf> page 81-82]. This duck body burden does not easily translate into a water concentration, but is on the order of one half of one part in a million. The numeric targets for diazinon in the Chollas Creek TMDL are several orders of magnitude lower than the "No Observed Adverse Effects Level" (NOAEL) for the mallard duck, and are on the order of one half of one part in 10 billion. If the same magnitude of bioconcentration that occurs in the bluegill sunfish (≅ 500x) occurs in the mallard duck, the NOAEL for the duck is not expected to be reached.

- If USEPA determines that unreasonable risks remain for children or the environment, the USEPA will incorporate additional risk mitigation measures as part of the reregistration eligibility decision (RED) for the organophosphate pesticide diazinon. The USEPA Office of Pesticide Programs can be contacted for further information on residential or ecological risk assessment at (703) 305-5017 or <www.epa.gov/pesticides>.

- The USEPA accepted the termination of all indoor residential and indoor non-residential uses of diazinon. Also the USEPA and registrants have agreed to phase out and cancel outdoor residential lawn and garden uses (i.e., all outdoor non-agricultural uses) of the organophosphate pesticide diazinon over the next few years. These actions will help to mitigate risks to children and wildlife.

- A margin of safety is incorporated into the TMDL in order to account for uncertainty in the analysis. For this TMDL, a 10% explicit margin of safety was applied to account for uncertainties in the analysis. Additionally, conservative assumptions are contained within the DFG water quality criteria for diazinon that provide an implicit margin of safety.

- The TMDL numeric targets are designed to protect aquatic life species. Aquatic life is generaly believed to be the most sensitive biological receptor. Therefore if aquatic life is protected higher trophic levels are also protected.

11. Threats to Human Health

Comment: Ed Kimura, Sierra Club
Children no doubt have and will continue to play in and around the Chollas Creek and come in direct contact with the waters in this creek. Have the numeric targets been determined to be protective of children from these exposure pathways?

RWQCB Response:
The numeric targets for aquatic life within Chollas Creek for diazinon are 0.05 ug/L for chronic exposure and 0.08 ug/L for acute exposure. The Office of Pesticide Programs, which is part of the United States Environmental Protection Agency, has set the diazinon referecnce dose (RfD) at 0.00009 mg/kg/day. This means that an average 75 pound child could injest 0.0032 mg of diazinon per day for a lifetime with no anticipated ill effects. This would require the injestion of 40 liters of water with a diazinon concentration of 0.08 ug/L to reach the daily limit. Therefore, the chronic and acute numeric target for diazinon in Chollas Creek storm water are not considered to be a health risk for children. It is not the intent of this TMDL to provide a human health target for diazinon. This TMDL is being used to address the aquatic toxicity in Chollas Creek storm water caused by the pesticide diazinon.

USEPA has however, summarized human health and ecological risk findings and conclusions for the pesticide diazinon in the document, "Diazinon: HED Chapter for the Reregistration Eligibility Decision Document" dated December 2000 and "EFED RED Chapter for Diazinon" dated November 16, 2000 [<http://www.epa.gov/pesticides/op/diazinon/overview.pdf> page 1]. USEPA has indicated that based on currently registered uses of diazinon, all residential post application scenarios pose risk of concern to children [<http://www.epa.gov/pesticides/op/diazinon/overview.pdf> page 8]. Post application exposure (dermal and inhalation only) to children playing on diazinon treated lawns is of special concern. The short term dermal No Observed Adverse Effect Level (NOAEL) is 1mg/kg/day [<http://www.epa.gov/pesticides/op/diazinon/overview.pdf> page 8]. These scenarios produce far greater diazinon exposure than playing in a creek with a 0.08 ug/L concentration of diazinon. However, this risk is being reduced by the phase out of all indoor and outdoor residential uses of diazinon products. The residential uses of diazinon are being phased out by USEPA in order to reduce these human health risks.

The Food Quality Protection Act (FFQPA) of 1996 amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food, Drug, and Cosmetic Act (FFDCA) <http://www.epa.gov/oppfead1/fqpa/>. Consequently, USEPA developed a framework for conducting cumulative risk assessments for diazinon and other organophosphate (OP) pesticides <http://www.epa.gov/pesticides/cumulative/>. USEPA reviews pesticides (those initially registered prior to November 1984) under the FIFRA to ensure that they meet current scientific and regulatory standards. This review process, called reregistration, considers the human health and ecological risks of pesticides and results in actions to reduce risks that are of concern

<http://www.epa.gov/pesticides/reregistration>. To the extent that risks exceed levels deemed acceptable by USEPA, risks must be mitigated by actions designed to reduce human or environmental exposures to the pesticide. When USEPA completes its review of a pesticide for reregistration, it issues a risk management decision document known as an Interim Reregistration Eligibility Decision (IRED), a Reregistration Eligibility Decision (RED), or a Tolerance Reassessment Progress and Interim Risk Management Decision (TRED) <http://www.epa.gov/pesticides/reregistration/candidates.htm>.

On December 5, 2000, prior to the Interim Reregistration Eligibility Decision (IRED) scheduled for diazinon, USEPA released its revised risk assessment and announced an agreement with registrants to phase out/ eliminate certain uses of the pesticide diazinon <http:///www.epa.gov/pesticides/op/diazinon.htm>. The revised risk assessments for diazinon include health effects and environmental fate and effects. USEPA is in the process of developing its risk management plans, which will be incorporated into the RED for diazinon. If the agreement with registrants to phase out/ eliminate certain uses of diazinon does not fully mitigate all risks identified by USEPA, it is anticipated that additional risk mitigation actions will be proposed in the RED.

The USEPA Office of Pesticide Programs can be contacted for further information on residential or ecological risk assessment at (703) 305-5017 or <www.epa.gov/pesticides>.

12. Diazinon Degredates

Comment: Ed Kimura, Sierra Club
The staff report notes that diazinon degradates can be more toxic (diazoxon) and more persistent and mobile in the soil (oxyprimidine) that the parent diazinon. Did the determination of the numeric targets for diazinon take these factors into consideration? The Toxic Inventory Evaluation for Chollas Creek does not indicate that these and other diazinon degradates were measured. The concern is that compliance with the numeric targets for diazinon still leaves open the question whether or not the concentration of the degradates will be sufficiently low to comply with the Basin Plan toxicity objective.

Comment: Hiram Sarabia, BayKeeper
The section on environmental degradation products of diazinon should go into more detail. Within this section a list of environmental degradation products of diazinon should be included, along with their chemical formulas. Also, a discussion of the what is known about the toxicity of the degradation products relative to diazinon should be included, addressing tetraehtyl dithio- and thiopyrophosphates in particular. These compounds are known to be degradation products in the absence of sufficient water and are extremely toxic.

RWQCB Response:
The numeric targets are expected to achieve compliance with the Basin Plan toxicity objectives. There are three parts to this response below: (1) storm water monitoring data, (2) diazinon induced toxicity, and (3) margin of safety.

Storm Water Monitoring Data
Storm water monitoring data from 34 storm water samples collect at Chollas Creek from 1999 – 2001 shows that toxicity is linked to diazinon concentrations (MEC, 2002). Controlling the concentration of the parent diazinon will reduce diazinon induced storm water toxicity. This is supported by the Chollas Creek storm water toxicity data where a correlation has been found between toxicity to Ceriodaphnia dubia and concentrations of diazinon in Chollas Creek storm water samples. A correlation coefficient of 0.7032 was obtained after analysis of 34 storm water samples collected during the period 1999 through 2001 (MEC, 2002).

Diazinon induced toxicity
The concentration of the diazinon degradates is linked to the concentration of the parent diazinon. The diazinon degradate, diazoxon, is believed to be the dominant toxic component of diazinon in surface waters (USEPA, 2000). If the concentration of the parent diazinon is reduced, then it follows that the concentration of the diazinon degradates will also be reduced. Diazinon's primary mode of action is characterized as inhibiting acetylcholinesterase (AChE), however the parent diazinon itself cannot inhibit AChE but requires preliminary oxidation to the degradate diazoxon (Keiger et al, 1995 in USEPA 2000) to inhibit AChE. <www.epa.gov/pesticides/op/diazinon/risk_Oct2000.pdf>. Though diazoxon was detected in field studies, it's persistence is unclear, since it is not reported to be a major degradate in laboratory studies (USEPA, 2000). On average, diazoxon has been found in streams and rivers in California in concentrations that are 2.5% of the parent concentration (USEPA, 2000). It is true there is a paucity of data for diazoxon (USEPA, 2000). However, there is data on the parent diazinon. Reducing the concentration of the parent diazinon reaching storm water will reduce the concentration of diazinon degradates reaching storm water.

Margin of Safety
This TMDL incorporates both an implicit and explicit margin of safety within the numeric target in order to account for uncertainty in the relationship between the concentration-based loading capacity of diazinon and attainment of the water quality objectives for toxicity and pesticides. The margin of safety can be implicit (i.e., incorporated into the TMDL analysis through conservative assumptions) or explicit (i.e., expressed in the TMDL as a portion of loadings) or a combination of both. For this TMDL, a 10% explicit margin of safety was applied to account for uncertainties in the analysis. This TMDL also incorporates an implicit margin of safety because numerous conservative assumptions were made to ensure that the analytical methods applied are environmentally protective. These conservative assumptions provide additional protection for aquatic life and minimize aquatic toxicity. The conservative assumptions are as follows: The selected numeric targets for diazinon

are the most stringent concentration-based values for freshwater. The Regional Board has selected the lowest recommended values from the California Department of Fish and Game water quality criteria as the best water quality indicator for diazinon; The DFG water quality criteria incorporates the most sensitive of the indicator test animals. The DFG water quality criteria utilized recent diazinon research data on toxicity utilizing highly sensitive species (e.g., Ceriodaphnia dubia and Daphnia magna) as well as other freshwater aquatic species; and an additional margin of safety is also built into the water quality criteria themselves (Siepmann and Finlayson, 2000).

13. Diazinon Source Control/Reduction is Needed

Comment: Ed Kimura, Sierra Club

The TMDL process for diazinon focuses on the water quality of the receiving watershed. However, there are other various pathways by which this toxic pesticide can cause harm to human health and the environment. Direct human and wildlife contact with lawns and other forms of vegetation treated with the pesticide are examples. This pathway is especially critical to birds and bees as they are highly susceptible to diazinon. Diazinon can enter the watershed not only via groundwater transport and urban runoff but also via the atmosphere. The point we wish to make here is that the implementation plan to achieve the reductions in the diazinon concentration in the Chollas Creek must also address the source control of the toxin. The concern is that the emphasis might be placed on structural Best Management Practices (BMPs) to treat the contaminated runoff but in so doing fail to protect the health of humans and the ecosystem from the other non-water pathways. Consequently, we must emphasize the need to place the highest priority on source reduction of diazinon.

RWQCB Response:

The RWQCB agrees that diazinon source reduction is very important. The responsible parties are required to develop and implement a Diazinon Toxicity Control Plan (DTCP) as a component of this TMDL. The DTCP will include implementation measures for diazinon source reduction which will help to protect Chollas Creek, and in so doing also help to protect the health of humans and the ecosystem.

Also, the USEPA accepted the termination of all indoor residential and indoor non-residential uses of diazinon. USEPA and registrants have agreed to phase out and cancel outdoor residential lawn and garden uses (i.e., all outdoor non-agricultural uses) of the organophosphate pesticide diazinon over the next few years. These actions will help to mitigate risks to children and the environment

If USEPA determines that unreasonable risks remain for children or the environment, the USEPA will incorporate additional risk mitigation measures as part of the interim reregistration eligibility decision for the organophosphate pesticide diazinon. The USEPA Office of Pesticide Programs can be contacted for further

information on residential or ecological risk assessment at (703) 305-5017 or <www.epa.gov/pesticides>.

14. Chollas Creek Enhancement Program

Comment: Ed Kimura, Sierra Club
The recently reported Chollas Creek enhancement program can provide an excellent opportunity for the copermittees to promote the public awareness of need for IPM and other non-toxic pest control methods to assist in achieving the goals of this program as well as in meeting the ten-year schedule for the diazinon numeric targets.

RWQCB Response: The RWQCB agrees**.**

15. Diazinon in Sediments

Comment: Ed Kimura, Sierra Club
There is some question concerning whether diazinon will accumulate in the sediment to a concentration harmful to the benthos. This matter was discussed at the May workshop. The Basin Plan Pesticide Objective states: “No individual pesticide or combination of pesticides shall be present in the water column, sediments, or biota at concentration(s) that adversely affect beneficial uses.” To help resolve this issue, we recommend that the Chollas Creek sediments be monitored for diazinon and its degradates. We believe it is essential to assess the sediment quality and the benthos in order to restore Chollas Creek to a healthy sustainable ecosystem. This sediment monitoring could also be conducted with sediment monitoring for the metals copper and zinc if the sediment has not yet been assessed for these metals.

Comment: Hiram Sarabia, BayKeeper
Given diazinon’s affinity to sediment, the effects of the pesticide on benthic communities should also be discussed and evaluated. The discussion should include a list of scientific literature and technical documents describing known benthic community impacts in both marine and freshwater habitats. In addition, a benthic community monitoring component should be included as a tool to evaluate TMDL effectiveness (following a triad approach).

RWQCB Response:
The TMDL monitoring plan has been modified to include sampling of Chollas Creek sediments for diazinon.

The following information on the benthic community impacts of diazinon in freshwater habitats was added to the RWQCB technical report for the TMDL:

"Diazinon levels of 0.30 µg/L in a stream resulted in a 5 to 8 times decrease in sensitive aquatic insect (e.g.,mayfly and caddisfly) emergence within three weeks of

exposure; after twelve weeks, sensitive aquatic insects (e.g., mayflies, damselflies and caddisflies) and sensitive crustaceans (e.g., amphipods) were no longer detected in benthic samples (Arthur et. al., 1983)."

Additionally, the Regional Board is currently conducting a TMDL to address benthic community degradation at the mouth of Chollas Creek. To provide information for that TMDL, a sediment quality assessment study at the mouth of Chollas Creek IN San Diego Bay is underway by the Southern California Coastal Water Research Project entitled, "Sediment Quality Assessment Study at Chollas Creek and Paleta Creek, San Diego". One of the primary goals of the study is to determine the current spatial extent and relative magnitude of impacts on the benthic environment near the mouth of Chollas Creek and to determine the relative importance of urban runoff as a source of the sediment contamination. Four indicators of sediment quality will be measured including: sediment contaminants, sediment toxicity, benthic community composition, and bioaccumulation. The concentrations in surface sediments of trace metals (e.g., copper and zinc) and organic contaminants will be measured. Results of that study are expected to provide information with which to address concerns with regard to contamination of the Chollas Creek sediments, and also to provide information about sediment toxicity, and impacts to the benthic community.

16. USEPA Phase-out Alone is not Sufficient

Comment: Joy Williams, Environmental Health Coalition
While the USEPA's phase-out agreement with manufacturers of diazinon is likely to significantly reduce diazinon contamination in the Chollas Creek watershed over the next several years, additional measures to curtail diazinon use such as those outlined in the TMDL implementation plan are valuable and necessary for the following reasons:

- Measures outlined in the TMDL implementation plan that promote Integrated Pest Management (IPM) strategies and result in the use of less toxic alternatives to diazinon prevent the danger of getting onto a "pesticide treadmill", where the elimination of one compound results in substitution of a pesticide that also creates hazards for human health and the environment; and

- While the USEPA phase-out agreement is scheduled to end sales of diazinon to retailers by mid-2003, retail stocks and consumer stocks of diazinon are likely to continue to contaminate the watershed for several more years.

- Continued contamination of the watershed may result from use of diazinon bought across the border in Mexico.

Though the goal of this TMDL is to reduce diazinon toxicity in waterways of the Chollas Creek watershed, the implementation plan should reflect the wider concerns for human health and the environment that prompted the USEPA phase-

out of diazinon. We encourage the Regional Board to emphasize pollution prevention in its implementation plan. Integrated Pest Management strategies that minimize the use of pesticides prevent the danger of increased use of toxic alternatives to diazinon, and protect human health and non-target organisms.

RWQCB Response:
The RWQCB appreciates EHC's support for the TMDL. The Regional Board encourages the use of pollution prevention. Pollution prevention and integrated pest management (IPM) are critically important strategies to incorporate into the focused public outreach / education program for the following targeted communities: (1) commercial owner and operator, (2) municipal, construction, industrial and quasi-governmental, and (3) residential. Pollution prevention and IPM strategies will provide the additional benefit of not only reducing the risk from diazinon, but also other replacement pesticides. Utilizing pollution prevention and IPM for source control provides the benefit of reducing pesticide contamination of waterways and also protecting human health and non-target organisms from pesticide contamination.

17. Faunal Survey Needed

Comment: Karen Henry, City of San Diego
The City supports the peer review request of Dr. Schlenk that an Ecology Risk Assessment and a description of fauna susceptible to diazinon be prepared. This biological assessment will complete the "triad approach" (physical, chemical and biological effects). The biological assessment will assist in the next update of the Basin Plan and could also identify if hydraulics or other physical conditions contribute to toxicity.

Comment: Hiram Sarabia, BayKeeper
It is important that a survey of aquatic organisms (including benthic communities) be conducted in Chollas Creek, including the characterization and mapping of viable aquatic life habitat within Chollas Creek. To this date such a survey has neither been found or done. It is important to know what it is we are trying to protect. Baseline data is needed for evaluation of trends.

RWQCB Response:
We agree that a baseline survey of aquatic organisms would provide valuable information towards understanding the warm freshwater habitat (WARM) and wildlife habitat (WILD) beneficial uses of the creek and could provide trend information for evaluation of future water quality restoration actions. A comprehensive study of the aquatic organisms of Chollas Creek has not been done. However, some field suveys of creekside habitats have been done in the Chollas Creek watershed. According to maps obtained from the California Natural Diversity database (1999), there are sensitive habitats contained within a portion of the Chollas Creek watershed include maritime succulent scrub and southern riparian scrub habitats.

Also, KEA Environmental conducted field investigations on May 15 and 22, and July 6, 2000 to include a biological site assessment for the Chollas Creek Wetlands Management Plan for inclusion in the Chollas Creek Enhancement Plan prepared for the City of San Diego, Department of Planning and Development Review. The report was prepared by Estrada+KEA Partnership and is dated December 8, 2000 and is available from Lesley Henegar at the City of San Diego. Existing habitats along the creek were mapped at a 1:24,000 scale including: riparian scrub (e.g., mulefat and black willow); freshwater marsh (e.g., umbrella sedge, bullrush and spike sedge); riparian woodlands; and uplands.

According to the Estrada+KEA Partnership (2000) report, the hydrology for South Las Chollas Creek has been studied and the floodplain has been mapped. The Flood Insurance Rate Maps show Flood Hazard Zones based on 100-year and 500-year floods. The peak 100-year discharge for South Las Chollas Creek used for the floodplain map is as follows:

- Above confluence with Las Chollas Creek: 5300 cubic feet per second (cfs)
- Above confluence with Encanto Branch: 1900 cfs
- At Kelton Road: 1500 cfs
- Encanto Branch above the confluence: 3500 cfs.

Also, the DFG Toxic Substances Monitoring (TSM) program fish collection efforts on July 25, 2000 found marine and estuarine fishes at the mouth of Chollas Creek. Regional Board staff observed the following fish and invertebrates within Chollas Creek a few yards upstream of the 32nd Street bridge crossing: stingray (Urolophus halleri), long jaw mudsucker (Gillichthys mirabilis), topsmelt (Atherinops affinis), mullet (Mugil cephalus), California killifish (Fundulus parvipinnis), shore crabs (Hemigrapsus sp.), and California hornshell snails (Cerithidea californica). Numerous bird species have also been observed in the watershed.

18. Synergistic Pesticide Effects and Alternative Pesticides

Comment: Hiram Sarabia, BayKeeper
A discussion of possible synergistic effects of Diazinon with other known contaminants in Chollas Creek should be included. In particular, the effectiveness of the proposed WQC in protecting aquatic life should be evaluated in light of known toxicant interactions. As in other sections of the TMDL statements should be backed by technical or scientific literature and the absence of valuable information should be noted and addressed.

Comment: Joy Williams, Environmental Health Coalition
IPM education and outreach - Attachment M describes many effective public education strategies. We suggest that the topics to be covered include not only the water quality but also the human health effects and other environmental impacts of diazinon. Also, the health and environmental effects of other organophosphates,

carbamates, pyrethrins, and other pesticides that may be likely substitutes for diazinon should be covered.

RWQCB Response:
Comment noted. The original TIE investigation suggested strongly that diazinon was the major source of toxicity in Chollas Creek. Metals were also found to be a source of toxicity in Chollas Creek. Although synergism is always a potential concern, available data does not indicate that diazinon is acting in a synergistic manner to cause toxicity. Once toxicity due to diazinon is eliminated, additional TIEs and investigations into synergistic interactions may be explored.

19. Position of the Department of Pesticide Regulation (DPR)

Comment: John Sanders, Ph.D., DPR
This memorandum contains comments on the total maximum daily load (TMDL) for diazinon in Chollas Creek and its implementation plan. The Department of Pesticide Regulation (DPR) understands and respects the San Diego Regional Water Quality Control Board's (SDRWQCB's) obligations under the Clean Water Act and consent decree to complete this diazinon TMDL. We expect that issues related to diazinon sources, load analysis, allocation, implementation plan, etc., will be commented on extensively by stakeholders that may be more directly affected by the TMDL.

Instead of specific technical comments, DPR would like to inform you of the availability of documents addressing urban pesticide use and water quality. These studies will be useful resources to your TMDL:

Survey of Residential Pesticide Use and Sales in the Chollas Creek Watershed of San Diego County, California. The University of California Statewide Integrated Pest Management Project conducted the survey. Cheryl Wilen, Ph.D., is the primary investigator. Chollas Creek is one of several watersheds in Southern California being surveyed by her. Although a final report is not yet available, data have been compiled and analyzed. She can be contacted at (858) 694-2846 or <cawilen@ucdavis.edu>. Recent surveys completed in watersheds in the vicinity of Los Angeles and Orange Counties may also be of relevance to this TMDL.

1999-2001 Chollas Creek Watershed Monitoring. The City of San Diego and its consultants developed a monitoring network for diazinon and other contaminants in the Chollas Creek watershed. Lisa Kay of MEC Analytical Systems, Inc. is the primary investigator. A final report (dated May 2002) is available from DPR as a hard copy although it is not yet online. Lisa Kay can be contacted at (760) 931-8081 or <kay@mecanalytical.com>.

Monitoring of Urban Pesticide Runoff from Test Residential Areas: Annual Report to the Department of Pesticide Regulation. The Irvine Ranch Water District conducted this residential irrigation and rain runoff monitoring study in Irvine. Eric Akiyoshi is the primary investigator. The first annual report is being currently finalized. In the interim, Eric Akiyoshi, can be contacted for any information on the study, including monitoring data, at (949) 453-5854 or <akiyoshi@irwd.com>.

Organophosphorus Pesticides in Stormwater Runoff from Southern California.
The Southern California Coastal Water Research Project monitored stormwater runoff from specific urban land uses. Ken Schiff is the primary investigator. A final report (dated November 9, 2001) is available from DPR as a hard copy, although it is not yet online. Ken Schiff can be contacted at (714) 372-9202 or <kens@sccwrp.org>.

Diazinon and Chlorpyrifos Products: Screening for Water Quality Implications.
The San Francisco Estuary Project and TDC Environmental analyzed the various diazinon and chlorpyrifos formulations and sites of use for surface water runoff potential. Kelly Moran, Ph.D., is the primary investigator. A final report (dated March 26, 2001) is available from DPR at <http://www.cdpr.ca.gov/docs/surfwatr/surfmenu.htm>. Kelly Moran, Ph.D., can be contacted at (650) 627-8690 or <kmoran@tdcenvironmental.com>.

Runoff of Diazinon from Paved Plots and Test Sites. The County of Alameda studied diazinon runoff from paved plots and urban test sites. James Scanlin is the primary investigator. A final report (dated September 1, 2001) is available from DPR at <http://www.cdpr.ca.gov/docs/surfwatr/surfmenu.htm>. James Scanlin can be contacted at (510) 670-6548 or <jims@acpwa.mail.co.alameda.ca.us>.

RWQCB Comments:
The RWQCB appreciates the references provided by DPR. As a point of clarification this TMDL is not subject to a consent decree.

20. Clarification of Best Management Practices (Update of Attachment F)

Comment: Joy Williams, Environmental Health Coalition –
An IPM Framework for Pollution Prevention --An emphasis on pollution prevention in the implementation plan requires that a clear distinction be made between pest control strategies that prevent the use of pesticides and those that encourage safe-handling of pesticides, and that priority is given to pesticide use prevention.

In the TMDL implementation plan, the use of the term 'Best Management Practices' (BMPs) to cover both types of pest control strategies is confusing. In our understanding, the term BMP in the context of water quality protection describes the handling of a hazardous material in a manner that reduces discharge to surface waters. In section 11.20-3-b (Page 35) of the report, this definition of BMP seems to apply in the statement, "The plan should consist of pollution prevention and source control best management practices designed to reduce discharge to the creek."

In Attachment F of the report, however, the term 'Best Management Practices' is used to describe not only handling practices that reduce surface water contamination, but also pollution prevention strategies commonly used in an Integrated Pest Management framework. Also, Attachment F does not provide a guide for prioritizing the different strategies, so that in the attachment, practices that use diazinon in a manner that reduces discharge to the creek, but still can harm human health and non-target organisms, are given equal footing with practices that use alternatives to pesticides.

We suggest that BMPs for the safest possible handling of diazinon be recommended only as part of a larger IPM framework that emphasizes pesticide-use prevention before turning to pesticides as a last resort.

This framework would prioritize in order: (1)Prevention of indoor and outdoor pests, (2) Use of nontoxic or less toxic alternatives, and (3)Minimize hazards of pest control products used (this is where the BMPs fit).

Comment: Joy Williams, Environmental Health Coalition
Specific suggestions for Attachment F:

A. Add to the website list: www.pesticide.org/default.htm , the website for the Northwest Coalition for Alternatives to Pesticides. The site has free,

downloadable PDF files on alternative control measures for a wide variety of pests. This site is especially suitable for the general public, who aren't likely to go to the trouble of sending for the BIRC publications, for example.

B. The Seattle Natural Lawn Care Campaign is a good model for agencies pooling resources to do an effective public educational campaign that includes mass media and more interactive approaches.

C. The IPM marketing workshop for pest control businesses should include information on how to make money without applying pesticides, such as development of contracts for inspection and monitoring services and sanitation and repair recommendations to avoid pest problems.

D. Likewise, facilities managers need sample contracts to hire pest control services that charge for prevention of pest problems rather than application of pesticides.

RWQCB Response:
Attachment F has been updated to incorporate these suggestions.

21. Efficacy of Education and Outreach

Comment: Joy Williams, Environmental Health Coalition
The TMDL implementation plan should include an evaluation plan for determining the efficacy of public outreach efforts. Monitoring of Chollas Creek will provide an indication of the level of diazinon use in the watershed, but an evaluation of the outreach efforts specifically could help improve outreach programs, and determine if other pesticides of concern are being substituted for diazinon. Such an evaluation could take the form of a survey of users targeted in the outreach programs.

RWQCB Response:
The RWQCB agrees. The TMDL implementation plan requires Responsible Parties to develop a Diazinon Toxicity Control Plan that includes a measure of determining the efficacy of public outreach efforts.

22. Buy-back Program Support

Comment: Joy Williams, Environmental Health Coalition
EHC supports the implementation of a buy-back program, that includes IPM education and outreach, to address the probable 'stockpiling' of diazinon due to more aggressive marketing prior to the EPA ban, and the potential for consumers to be wary of losing access to a familiar product.

RWQCB Response:
The RWQCB agrees and will encourage buy-back programs.

23. Diazinon-specific permits

Comment: Melanie McCutchen, Environmental Health Coalition
The Environmental Health Coalition encourages the Regional Board to evaluate issuing general or individual permits to large users of diazinon in the Chollas Creek watershed. Such permits could direct users to implement Integrated Pest Management strategies to prevent their use of diazinon and potentially toxic pesticide alternatives. Facilities targeted for such permits could include those with large turf areas, such as golf courses and cemeteries, and facilities containing large numbers of structures, given the importance of structural pest control as a source of diazinon contamination.

RWQCB Response:
The RWQCB does not generally issue permits for individual pollutants. The RWQCB currently regulates these entities through one or more storm water permits. Industrial facilities are regulated under the statewide General Industrial Storm Water Permit as well as indirectly under the MS4 permit. Golf courses and cemeteries are regulated under the MS4 permits. The Regional Board recognizes that source control of diazinon from structural pest control activities is an important implementation measure.

In this regard, the Regional Board has included examples of education and outreach activities that would be important to implement. Attachment 4 (Public Outreach and Education) provides examples of commercial owner and operator communities education and outreach activities. These implementation activities would provide source control of diazinon from structural pest control and include: (1) providing an IPM marketing workshop to pest control advisors, pest control operators and pest control businesses; (2) providing IPM training classes to PCAs and PCOs; and (3) providing IPM certification to PCAs, PCOs, and pest control businesses that have completed minimum IPM requirements.

24. IPM policies of the Co-permittees

Comment: Melanie McCutchen, Environmental Health Coalition
EHC suggests that the Regional Board use the opportunity of this TMDL to promote the adoption of Integrated Pest Management policies by the City of San Diego and the other co-permittees identified in the TMDL.

RWQCB Response:
Comment noted. Regional Board staff has encouraged co-permittees to begin education and outreach programs and to integrate IPM strategies as soon as possible. The City and County of San Diego already have plans in development to accomplish these goals, with initial implementation scheduled for later this year.

25. Commending Regional Board Staff Efforts

Comment: Ed Kimura, Sierra Club
We commend the Staff for conducting the May 17, 2002 public workshop on the total maximum daily load (TMDL) for the diazinon in the Chollas Creek watershed. The information provided and exchange of comments at this workshop has been useful to us.

Comment: Joy Williams, Environmental Health Coalition
Environmental Health Coalition is pleased that the Regional Board is taking action to eliminate diazinon toxicity in waterways of the Chollas Creek watershed, and reduce the use of this dangerous pesticide. Diazinon poses a serious threat to water quality, non-target organisms, as well as human health.

RWQCB Response:
Comment noted. Thank you for the support.