BI-WEEKLY CONFERENCE CALL
DRAFT AGENDA

DATE: August 19, 1999, Thursday
TIME: 10:00 am – 12 noon
PLACE: RBF, Irvine or via phone (916-657-4102)
ATTENDEES: Rich Horner/Chris May, Jeremy Johnstone, Rick Graff, Bob Wu, Marcelo Peinado, Steve Borroum, Brian Currier, Cid Tesoro, Pete Van Riper, Dean Messer, Brown and Caldwell, Montgomery Watson/Law, KLI, RBF
COPIES TO: File
SUBJECT: BMP Pilot Study Status

AGENDA ITEMS

1. D7 Design Status: Metro MS, Paxton MS, CDS designs
2. District 7 Operation/Maintenance Status (Recent activities/schedule for sites to equip)
3. District 11 Operation/Maintenance Status (Recent activities/schedule for sites to equip)
4. Vector Issues
BMP Pilot Studies

Bi-Weekly Status Report

BMP Pilot Projects in District 7 and District 11

August 16, 1999

Robert Bein, William Frost & Associates
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Weekly inspections have been performed at the sites where non-stormwater runoff were noted during the previous 4 weeks. The following table summarizes when non-stormwater runoff were noted.

### Evidence of Non-Stormwater Discharge into BMP (Y-Yes/N-No)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Brown and Caldwell Sites – D7</th>
<th>Law Crandall Sites – D7</th>
<th>KLI Sites – D11</th>
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<tr>
<td></td>
<td>Foothill MS: SF</td>
<td>5/605 EDB</td>
<td>Via Verde: MCTT</td>
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<tr>
<td>July 12</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>July 19</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>July 26</td>
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<td>-</td>
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</tr>
<tr>
<td>Aug 2</td>
<td>Y</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aug 9</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
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</table>

**Note:**
- N – No Evidence of Non-Stormwater Runoff Discharged into BMP
- Y – Non-Stormwater Runoff was Observed
- - No Inspection was held during the week.
ACTIVITY DESCRIBED IN THIS REPORT COVERS THE PERIOD FOR THE FIRST TWO WEEKS OF AUGUST 1999.

District 7 BMP Pilot Sites

I-605/SR-91 Interchange Infiltration Basin (Site ID 73101) MW/Law

Monitoring/Sampling Activities

A cellular phone was connected on August 11.

Operations and Maintenance

On August 4, maintenance boundaries were delineated with survey tape and stakes. A monthly inspection was conducted during the period of August 11/12. On August 12, trash and debris were removed from the site, and burrows were filled. Removal of woody vegetation began on August 12 and was complete on August 16.

Vector Activities

On July 29, LAW Crandall toured the site with a vector control specialist and a wildlife consultant. Gopher burrows were observed in the BMP. Currently, ground squirrels are not impacting the BMP and do not require abatement; according to the wildlife consultant, their burrows do not promote suitable habitat for burrowing owls.

The inlet structure was treated with Golden Bear (0.54 ounces) on July 30. Sampling had been prevented by activity at the site; when monitoring was renewed, pupae were found and immediate action was required. The most recent monitoring efforts occurred on August 3-4 and August 10-11.

Issues / Solutions

The inflow box grate will be replaced with a lighter cover by the end of August.

Abatement of gophers, using box traps, will begin the week of August 15.

Vegetation coverage of the infiltration basin floor and slopes is minimal and does not meet the maintenance indicator document requirements. Per the maintenance indicator document, the infiltration basin will be hydroseeded in November.

The site was inspected for non-stormwater discharges on July 29, August 5, and August 12.

As of August 13, the mourning dove had not been seen for over two weeks, but eggs were still observed. Based on recommendations from Dudek, maintenance could begin. Removal of woody vegetation began on August 12.
I-210/East Orcas Avenue Continuous Deflection Separators (Site ID 73102)  
MW/Law

I-210/East of Filmore Street Continuous Deflection Separators (Site ID 73103)  
MW/Law

Status

District clearances have been obtained. Plans and specifications are being submitted to Santa Ana Service Center for further processing. See schedule below.

Schedule

<table>
<thead>
<tr>
<th>Activity</th>
<th>Schedule Dates</th>
<th>Actual Dates</th>
<th>Duration (calendar weeks)</th>
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<tr>
<td>Obtain EA</td>
<td>06/01/99</td>
<td>06/04/99</td>
<td></td>
</tr>
<tr>
<td>Begin Clearance</td>
<td>06/21/99</td>
<td>06/28/99</td>
<td></td>
</tr>
<tr>
<td>Obtain District Clearances/to Santa Ana</td>
<td>07/26/99</td>
<td>08/13/99</td>
<td>4</td>
</tr>
<tr>
<td>End Santa Ana Review, Advertise, and Bid Opening</td>
<td>11/05/99</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Award Contract</td>
<td>12/03/99</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Begin Construction</td>
<td>12/31/99</td>
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<td>4</td>
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<tr>
<td>Complete Construction</td>
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I-5/I-605 Extended Detention Basin Lined (Site ID 74101)  
BC

Monitoring/Sampling Activities

An H-flume was installed to improve low-flow effluent monitoring accuracy. Calibration verification testing was performed. CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Decontaminated hose and tubing will be installed in September. Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

Operations and Maintenance

Monthly maintenance inspection was performed. Caution tape was installed around the basin, and temporary warning signs were installed. Caltrans standard lock installation on BMP security fences is scheduled for completion during the week of August 23.

Vector Activities

Monitoring occurred on August 3-4 and 10-11. No activity was noted.
Issues / Solutions

None this period.

I-605/SR-91 Extended Detention Basin – Unlined (Site ID 74102) BC

Monitoring/Sampling Activities

Calibration verification testing was performed. CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Decontaminated hose and tubing will be installed in September. Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

Operations and Maintenance

Monthly maintenance inspection was performed. Caution tape was installed around the basin, and temporary warning signs were installed. A Work Directive to replace the entrance gate at the site was authorized and awarded to UDC Corporation.

Caltrans standard lock installation on BMP security fences is scheduled for completion during the week of August 23.

Vector Activities

Monitoring occurred on August 3-4 and 10-11. No activity was noted.

Issues / Solutions

None this period.

Paxton Maintenance Station Media Filter (Site ID 74103) BC

Metro Maintenance Station Multi-Chamber Treatment Train (Site ID 74104) BC

Status

Paxton MS: District clearances have been obtained. Plans and specifications have been submitted to the District Office of Engineers for further review. See schedule.

Metro MS: Clearance process continues. See schedule.
Schedule

Design/Construction Schedule for Metro MS MCTT

<table>
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<td>07/02/99</td>
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<td>07/30/99</td>
<td>08/20/99</td>
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<td>Obtain District OE Approval/to HQ</td>
<td>09/17/99</td>
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<td>4</td>
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Design/Construction Schedule for Paxton PR Media Filter

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<td>End HQ Review, Advertise &amp; Bid Opening</td>
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</table>

Alameda Maintenance Station Oil/Water Separator (Site ID 74201) BC

Monitoring/Sampling Activities

CR-10 dataloggers were reinstalled. Final calibration verification testing is scheduled for early September.

Operations and Maintenance

Monthly maintenance inspection was performed. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

Vector Activities

Monitoring occurred on August 3-4 and 10-11. No activity was noted.
Issues / Solutions

None this period.

**Eastern Maintenance Station Media Filter (Site ID 74202) BC**

*Monitoring/Sampling Activities*

Calibration verification testing was performed. CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Decontaminated hose and tubing will be installed in September. Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

*Operations and Maintenance*

Monthly maintenance inspection was performed. A Work Directive for access ladders was authorized and awarded to UDC Corporation. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

*Vector Activities*

Monitoring occurred on August 3-4 and 10-11. No activity was noted.

**Foothill Maintenance Station Media Filter (Site ID 74203) BC**

*Monitoring/Sampling Activities*

CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Decontaminated hose and tubing will be installed in September. Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

*Operations and Maintenance*

Monthly maintenance inspection was performed. A Work Directive for access ladders was authorized and awarded to UDC Corporation. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

*Vector Activities*

San Gabriel Valley Vector Control District staff suspect that breeding is occurring. Conditions in the BMP appear suitable for breeding (standing water with algal growth). Sampling has not taken place due to the lack of safe ladder access to the sediment vault;
however, vector breeding will be confirmed when ladder access is available and sampling can be performed.

**Issues / Solutions**

On August 5 and 12, weekly inspections for non-stormwater discharges were conducted.

**Termination Park and Ride Media Filter (Site ID 74204) BC**

**Monitoring/Sampling Activities**

CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

**Operations and Maintenance**

Monthly maintenance inspection was performed. A Work Directive for access ladders was authorized and awarded to UDC Corporation. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

**Vector Activities**

Monitoring occurred on August 3-4 and 10-11. No activity was noted.

**Issues / Solutions**

None this period.

**Via Verde Park and Ride Multi-Chamber Treatment Train (Site ID 74206) BC**

**Monitoring/Sampling Activities**

CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

**Operations and Maintenance**

Monthly maintenance inspection was performed. Work Directives for re-striping electric vehicle parking spaces at the site and for access ladders were authorized and awarded to UDC Corporation. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

**Vector Activities**

San Gabriel Valley Vector Control District staff suspect that breeding may be taking
place. Vector breeding will be confirmed when ladder access is available and sampling can be performed.

**Issues / Solutions**

The installation of a drainage alternative for the tube settler chamber is planned for early September; the alternative will allow for draining of water in the chamber and minimize vector activities.

**Lakewood Park and Ride Multi-Chamber Treatment Train (Site ID 74208) BC**

**Monitoring/Sampling Activities**

Calibration verification testing was performed. CR-10 dataloggers and fresh deep-cycle batteries were reinstalled.

Upgrade of flow meter electronics by American Sigma is scheduled for late August. Final calibration verification testing is scheduled for early September.

**Operations and Maintenance**

Monthly maintenance inspection was performed. A Work Directive for access ladders was authorized and awarded to UDC Corporation. Caltrans standard lock installation on BMP security fences is scheduled for completion within 2 weeks.

**Vector Activities**

Monitoring occurred on August 3-4 and 10-11. Evidence of breeding in individual sedimentation tubes was noted.

**Issues / Solutions**

During early September, a drain hole will be installed to minimize standing water.

The repair/upgrade due to low voltage of the power supply to the BMP will take place within 3 to 6 weeks (by Edison). A diesel generator is available as a standby source of power supply.

**Altadena Maintenance Station Bio Strip and Infiltration Trench (Site ID 73211 a, b) MW/Law**

**Monitoring/Sampling Activities**

Analytical data from spreader ditch sediment has been received and summarized by LAW Crandall.

Cellular phones were connected on August 11.
Operations and Maintenance

On July 30, GroPower Plus fertilizer was applied to the biofilter. The biofilter was irrigated during the weeks of August 1st and 8th. The process of profiling and manifesting the two 55-gallon drums of sediment removed from the BioStrip spreader began on August 10. A monthly inspection was conducted during the period of August 11/12. Weeds were removed from the Strip.

Vector Activities

The monitoring efforts of August 3-4 and August 10-11 showed breeding at the site. The site was treated with Golden Bear on July 29, with VectoBac (a bacterial toxin) on August 5, and with Altosid on August 12. Golden Bear (1.62 ounces) was used on July 29, because pupae were present which required immediate action. The shallow water at the site warms up quickly, causing the acceleration of larval development. The monitoring schedule for the site will be modified to increase the frequency of monitoring so that mosquito breeding will be caught in the larval stage.

Issues / Solutions

Site will be operational on October 1.

The site was inspected for non-stormwater discharges on July 29, August 5, and August 12.

Work on the spreader ditch is scheduled to occur in early September.

Biofilter vegetation will not be mowed until week of October 17, as recommended by Martha Blane, to enhance vegetation establishment.

Foothill Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73216 a, b) MW/Law

Monitoring/Sampling Activities

Analytical data (stormwater and solids) from the inserts have been received and summarized by LAW Crandall.

Cellular phones were connected on August 11.

Operations and Maintenance

Monthly inspection was conducted during the period of August 11/12.

Vector Activities

None noted during routine inspection.
**Issues / Solutions**

On July 29, August 5, and August 12, weekly inspections for non-stormwater discharges were conducted.

**Las Flores Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73217 a, b) MW/Law**

**Monitoring/Sampling Activities**

Analytical data (stormwater and solids) from the inserts have been received and summarized by LAW Crandall.

Cellular phones were connected on August 11.

**Operations and Maintenance**

Monthly inspection was conducted during the period of August 11/12.

**Vector Activities**

An agreement for monitoring and abatement services has not yet been signed. The agreement was presented to the District Board of Directors and approved in July. The agreement was forwarded to Montgomery Watson for review the week of August 9.

**Issues / Solutions**

The site was inspected for non-stormwater discharges on July 29, August 5, and August 12.

**Rosemead Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73218 a, b) MW/Law**

**Monitoring/Sampling Activities**

Analytical data (stormwater and solids) from the inserts have been received. The lab results are provided as an attachment to the Biweekly Report.

Cellular phones were connected on August 11.

**Operations and Maintenance**

On July 29 and August 12, sediment/debris was removed from the Fossil Filter. Monthly inspection was conducted during the period of August 11/12.

**Vector Activities**

On August 5, the flume housing was treated with Golden Bear (0.02 ounces). The site contained in
excess of 50 larvae per dip, including pupae. Due to the advanced stage of development of the immature mosquitoes, it was determined that physical control would not be rapid enough to prevent the emergence of adult mosquitoes. As a result, Golden Bear was applied. On August 12, the flume housing treated with Golden Bear was dry and did not require treatment.

Caltrans, Montgomery Watson, LAW Crandall, Larry Walker Associates, and the Vector Control District met at the maintenance station on August 12 to discuss vector control.

Issues / Solutions

On July 29, August 5, and August 12, weekly inspections for non-stormwater discharges were conducted.

I-605/SR-91 Interchange Bio Strip & Swale (Site ID 73222 a, b) MW/Law

Monitoring/Sampling Activities

Cellular phones were connected on August 11.

Operations and Maintenance

On July 30, GroPower Plus fertilizer was applied to the biofilters. The biofilters were irrigated during the weeks of August 1st and 8th. On August 4, maintenance boundaries for the biofilters were delineated with survey tape and stakes. Monthly inspection was conducted during the period of August 11/12.

Strip: Weeds were removed, trash and debris were removed, and burrow holes were filled on August 11.

Swale: Soil which had fallen into the energy dissipator was removed, weeds were removed, trash and debris were removed, and burrow holes were filled on August 11.

Vector Activities

Monitoring by the Vector Control District occurred on August 3-4 and 10-11. No activity was noted.

Issues / Solutions

Site will be operational by October 1.

Abatement of gophers, using box traps, will begin the week of August 15.

Modification to the Strip site, due to traffic safety concerns, will occur in early September.

The BioSwale dissipator is scheduled to be grouted in mid-September.

Biofilter vegetation will not be mowed until week of October 17, as recommended by
Martha Blane, to enhance vegetation establishment.

**Cerritos Maintenance Station Bio Swale (Site ID 73223) MW/Law**

*Monitoring/Sampling Activities*

Cellular phones were connected on August 11.

*Operations and Maintenance*

On July 30, GroPower Plus fertilizer was applied to the biofilter. The biofilter was irrigated during the weeks of August 1\textsuperscript{st} and 8\textsuperscript{th}. On August 4, maintenance boundaries for the biofilter were delineated with survey tape and stakes. Monthly inspection was conducted during the period of August 11/12. On August 12, weeds were removed, trash and debris were removed, and burrows were filled.

*Vector Activities*

Monitoring by the Vector Control District occurred on August 3-4 and 10-11. No activity was noted.

*Issues / Solutions*

Site will be operational by October 1.

Abatement of gophers, using box traps, will begin the week of August 15.

The BioSwale dissipator is scheduled to be grouted in mid-September.

Biofilter vegetation will not be mowed until week of October 17, as recommended by Martha Blane, to enhance vegetation establishment.

On July 29, August 5, and August 12, weekly inspections for non-stormwater discharges were conducted.

**I-5/I-605 Bio Swale (Site ID 73224) MW/Law**

*Monitoring/Sampling Activities*

Cellular phones were connected on August 11.

*Operations and Maintenance*

On July 30, GroPower Plus fertilizer was applied to the biofilter. The biofilter was irrigated during the weeks of August 1\textsuperscript{st} and 8\textsuperscript{th}. On August 4, maintenance boundaries for the biofilter were delineated with survey tape and stakes. Monthly inspection was conducted during the period of August 11/12. Erosion control vegetation was cut to a height of 6 inches, weeds were removed, trash and debris were removed, and burrows were filled on August 12.
Vector Activities

The monitoring efforts of August 3-4 and August 10-11 showed breeding at the site. The energy dissipator was treated with VectoBac on August 5 and Altosid on August 12.

Issues / Solutions

Site will be operational by October 1.

Abatement of gophers, using box traps, will begin the week of August 15.

The BioSwale dissipator is scheduled to be grouted in mid-September.

Biofilter vegetation will not be mowed until week of October 17, as recommended by Martha Blane, enhance vegetation establishment.

I-605/Carson & Del Amo Bio Swale (Site ID 73225) MW/Law

Monitoring/Sampling Activities

Cellular phones were connected on August 11.

Operations and Maintenance

On July 30, GroPower Plus fertilizer was applied to the biofilter. The biofilter was irrigated during the weeks of August 1st and 8th. On August 4, maintenance boundaries for the biofilter were delineated with survey tape and stakes. Monthly inspection was conducted during the period of August 11/12. Seeps in the swale invert were filled, the surface of the invert was smoothed out, weeds were removed, and trash and debris were removed.

Vector Activities

Monitoring occurred on August 3-4 and 10-11. No activity was noted.

Issues / Solutions

Site will be operational by October 1.

The BioSwale dissipator is scheduled to be grouted in mid-September.

Biofilter vegetation will not be mowed until week of October 17, as recommended by Martha Blane, to enhance vegetation establishment.
District 11 BMP Pilot Sites

Maintenance Activities Applicable to all Sites

Monthly site inspections occurred in the first week of August. Minor maintenance and trash pickup is being performed during each monthly inspection.

Kinnetic Laboratories Inc. has secured a contract with Tree of Life Nursery to grow and maintain a stock of 1000 square feet of salt grass (*Distichlis spicata*) reserve until March 31, 2000.

Monitoring Activities Applicable to all Sites

All sites have had sample hoses pulled and sent to the lab for proper annual decontamination and blanking. In addition, most sites have been retrofitted with flow meters that include the Royal Mod boards for the AVBs and a power supply fix for the ultrasonics and AVBs. However, two sites had to have their flow meters returned to American Sigma Inc. because of LCD display problems. The ultrasonic at the inlet and outlet at the Escondido MS and the outlet at the La Costa P&R has yet to be installed. The meters will be shipped from American Sigma Inc. on August 16.

I-5/SR-56 Extended Detention Basin (Site ID 111101) KLI

Monitoring/Sampling Activities

None this period.

Operations and Maintenance

The site is scheduled to be weeded on August 14 by the landscape contractor.

Emergent woody wetland vegetation (*Typha*) was pulled on August 4 at the inlet rip-rap.

Vector Activities

The site was inspected on August 2 and 9. On August 2, the first riprap-retaining basin was holding water and breeding *Culex tarsalis* (egg rafts and 1st and 2nd instars at 0.1 larvae/dip). No treatment was deemed necessary. On August 9, the first riprap-retaining basin was holding water and breeding *Culex pipiens* (2nd and 3rd instars as well as pupae at 0.4 larvae/dip). No treatment was made. The site will be inspected again on August 16.

Issues / Solutions

Non-storm flows were noted, and District 11 was notified.
SR-78/I-15 Extended Detention Basin (Site ID 111102) KLI

**Monitoring/Sampling Activities**

Both the influent and the effluent underwent volumetric calibrations. Five hundred gallons of water were dispensed at varying flows and the inlet had approximately 10% error while the outlet had approximately 5% error. Both these errors were due to the meter’s inability to calculate flows below 0.01 cfs. KLI will attempt to improve flow meter resolution by performing the flow calculations in the data logger. The calibration at the effluent was done with an Area Velocity meter, not with the Palmer Bowlus. The decision was made to remove the Palmer-Bowlus flume permanently, because it does not perform well for measuring low flows.

**Operations and Maintenance**

The site is scheduled to be weeded on August 14 by the landscape contractor.

**Vector Activities**

The site will be inspected once every four weeks. The site was most recently inspected on July 26; the next inspection will occur on August 23.

**Issues / Solutions**

Non-storm flows were observed, and District 11 has been notified.

I-5/La Costa Avenue Infiltration Basin (Site ID 111103) KLI

**Monitoring/Sampling Activities**

Groundwater elevation monitoring continues. The log with recent readings is provided as an attachment to the biweekly report.

**Operations and Maintenance**

Emergent woody wetland vegetation (*Typha*) was pulled on August 7.

**Vector Activities**

The site was inspected on August 2 and 9. On August 2, the site contained standing water, but no mosquito breeding was noted. On August 9, the site was nearly dry; no mosquito breeding was noted. This site was previously stocked with mosquito fish.
Issues / Solutions

County of San Diego Vector Surveillance and Control has recommended that the site be modified to prevent water impoundment in order to prevent an on-going health hazard.

I-5/La Costa Wet Basin (Site ID 111104) KLI

Monitoring/Sampling Activities

The inlet has been fully calibrated; the site will be fully instrumented by late August. The outlet is awaiting custom stainless steel fittings for an H-flume that will be installed. No calibration will be performed at the outlet. If requested by the Plaintiffs, a calibration flow test can be performed in early September. The site will be completely ready for monitoring before October 1.

Operations and Maintenance

The site was hand weeded on August 2-5. The herbicide, “Manage,” has not been applied, and Native Landscape will wait to apply the herbicide until new nut grass sprouts appear out of the tributary area.

Vector Activities

The site was inspected on August 2 and 9. On August 2, the site was breeding *Culex tarsalis* (1st, 2nd, and 3rd instars at 0.3 larvae/dip). The breeding was minor and concentrated around the patches of watercress. *Gambusia* were abundant. On August 9, the site was breeding *Culex tarsalis* (1st, 2nd, and 3-4th instars as well as pupae at 0.1 larvae/dip). Vector control staff did not deem treatment necessary on either date.

Issues / Solutions

Irrigation problems reported on July 19 (appears to be attributed to the valves remaining partially open). The landscape contractor is attempting to resolve the problem.

I-5/Manchester Avenue Extended Detention Basin (Site ID 111105) KLI

Monitoring/Sampling Activities

The inlet and outlet have been fully equipped with monitoring equipment and fully calibrated. Flow calibrations will occur at the site in late August. If requested, Plaintiffs may attend flow calibrations.

Operations and Maintenance

KLI has been in contact with Caltrans Maintenance and has coordinated irrigation schedules for plant establishment. Two deciduous trees have died from either gophers or replanting mortality. Martha Blane has suggested that these trees be replanted in the fall. The Torrey Pines appear to have been over-watered. Martha Blane suggested watering the trees once a
week, applying water for two 15-minutes intervals within a 2 to 24 hour period. Caltrans has switched the site to the new watering schedule.

The site is scheduled to be weeded August 14 by the landscape contractor.

**Vector Activities**

The site will inspected once every four weeks. The site was most recently inspected on July 26; the next inspection will occur on August 23.

**Issues/Solutions**

Plant establishment is approximately 90 working days.

**Kearney Mesa Maintenance Station StormFilter - Perlite/Zeolite (Site ID 112201) KLI**

**Monitoring/Sampling Activities**

No site-specific monitoring activities have occurred.

**Operations and Maintenance**

No site-specific maintenance activities have occurred.

**Vector Activities**

The site was inspected on August 2 and 9. The site continues to have about 20 inches of water in the first chamber. The second chamber contained standing water before the baffle. The third and fourth chambers had standing water in the troughs below the entrance ports. No mosquito breeding was found on either date. Psychodid larvae were noted in the first and second chambers; however, no action was recommended (Psychodid flies are not considered vectors).

**Issues / Solutions**

No non-storm flows were observed.

**Escondido Maintenance Station Media Filter - Sand (Site ID 112202) KLI**

**Monitoring/Sampling Activities**

No site-specific monitoring activities have occurred.

**Operations and Maintenance**

On August 9, the canal gate in the pre-sedimentation chamber was opened and the standing water drained.
Vector Activities

The site was inspected on August 2 and 9. On August 2, the west side of the BMP held approximately 5 inches of standing water. There was no evidence of mosquito breeding but larval and pupal psychodids (Diptera: Psychodidae) were noted. On August 9, the water level on the west side of the BMP had decreased; the deepest point was less than 2 inches. Again, no mosquito breeding was noted.

Issues / Solutions

No non-storm flows were observed.

La Costa Park and Ride Media Filter - Sand (Site ID 112203) KLI

Monitoring/Sampling Activities

No site-specific monitoring activities have occurred.

Operations and Maintenance

No site-specific maintenance activities have occurred.

Vector Activities

The site was inspected on August 2 and 9. No activity noted.

Issues / Solutions

None this period.

SR-78/I-5 Park and Ride Media Filter - Sand (Site ID 112204) KLI

Monitoring/Sampling Activities

No site-specific monitoring activities have occurred.

Operations and Maintenance

No site-specific maintenance activities have occurred.

Vector Activities

The site was inspected on August 2 and 9. No activity noted.

Issues / Solutions

Non-storm flows were observed, and District 11 has been notified.
Melrose Ave/SR-78 Bio Swale (Site ID 112205) KLI

Monitoring/Sampling Activities

No site-specific monitoring activities have taken place.

Operations and Maintenance

The landscape contractor weeded the site on August 7.

During the last two weeks, KLI has watered the site every five days for two 45 minute periods within an 8 hour period. KLI applied a fertilizer, GroPower Plus, on August 11.

Vector Activities

The site will be inspected once every four weeks. The site was most recently inspected on July 26; the next inspection will occur on August 23. The site has been consistently dry.

Issues / Solutions

None this period.

I-5 Palomar Airport Biofiltration Swale (Site ID 112206) KLI

Monitoring/Sampling Activities

Security enclosures, rain gauge poles, cellular phones and solar panels have been installed at the inlet and outlet.

Operation and Maintenance

Irrigation is occurring three times a day for 15 minutes, and KLI is working with Marina Landscape to reduce this watering schedule.

Vector Activities

The site will be inspected once every four weeks. The site was most recently inspected on July 26; the next inspection will occur on August 23. The site has been consistently dry.

Issues / Solutions

Some of the salt grass at the site was being eaten by an unidentified organism. Bill Walton from UC Riverside was contacted, and samples of the eaten grass were collected. The samples were analyzed under a microscope, and it was determined that the salt grass was being eaten (damage was not due to disease). Grasshoppers or beetles may have eaten the salt grass. This problem does not appear to be significant and is being monitored.
Carlsbad Maintenance Station Bio Strip Infiltration Trench (Site ID 112207)
KLI

Monitoring/Sampling Activities

No site-specific monitoring activities occurred.

Operations and Maintenance

The landscape contractor weeded the site on August 7.

During the last two weeks, KLI has watered the site every five days for two 10 minute periods within an 8 hour period. A fertilizer was applied, GroPower Plus, on August 11.

Vector Activities

The site will inspected once every four weeks. The site was most recently inspected on July 26; the next inspection will occur on August 23. The site has been consistently dry.

Issues / Solutions

None this period.
**BMP OPERATIONS STATUS**

<table>
<thead>
<tr>
<th>Location</th>
<th>BMP Type</th>
<th>Monitor Consultant</th>
<th>Site &quot;On-line&quot;</th>
<th>Begin Instrument Install</th>
<th>Complete Instrument Install</th>
<th>Operational^3</th>
<th>Ready for Water Quality Monitoring^4</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTRICT 7</td>
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<tr>
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1. Equipment installation schedule is dependent upon construction schedule.
2. Site on-line means BMP will receive stormwater runoff, not necessarily ready for monitoring or operations.
3. Site operational means BMP meets completion criteria and BMP is turned over to monitoring/maintenance teams to begin empirical observations and maintenance. Biofilters are dependent on plant establishment criteria of 90%. coverage
4. Ready for water quality monitoring means BMP has a full equipment installation and the equipment is ready to draw samples.
5. The inlet and outlet will be instrumented with flow meters in late July (after construction and equipment purchase) for calibration. The CR-10s and Samplers will be instrumented 1st week of September and operational 9/15/99.
### SUMMARY OF REQUIRED STORMS AND SUCCESSFULLY SAMPLED STORMS PER SITE

<table>
<thead>
<tr>
<th>Location</th>
<th>BMP Type</th>
<th>Monitoring Consultant</th>
<th>Operational?</th>
<th>Total Storms Required</th>
<th>Successfully Sampled Storms (1)</th>
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<td>Infiltration Trench</td>
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</tr>
</tbody>
</table>

(1) Total number of successful storms for the DII sites with Fossil Filter Inserts is under review (pending results of water quality data).
OMM PLAN ACTIVITIES

VOLUME I

The OMM Volume I is under revision to update the report to include new BMP devices in District 7 (CDS) and District 11 (Wetbasin). A technical editor has reformatted and edited the report to eliminate redundancy and incorporating updates throughout the document responding to Plaintiff comments and the issues presented at the Quarterly Status Meeting (No. 5). Vol I is due to the Plaintiffs on August 27th.

VOLUME II

Volume II is being revised according the schedule below. It is being reviewed for clarity, brevity, and conformance to the planned changes. The document is currently scheduled for Plaintiff review starting August 27.

<table>
<thead>
<tr>
<th>Schedule</th>
<th>DATE DUE</th>
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<tbody>
<tr>
<td>OMM recommended changes to Plaintiffs</td>
<td>June 29</td>
</tr>
<tr>
<td>Plaintiff comment to changes</td>
<td>July 7</td>
</tr>
<tr>
<td>1st draft to Plaintiffs</td>
<td>August 27</td>
</tr>
<tr>
<td>Plaintiff Comments due</td>
<td>Sept 10</td>
</tr>
<tr>
<td>Response to Comments</td>
<td>Sept 17</td>
</tr>
<tr>
<td>Final</td>
<td>Sept 29</td>
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MAINTENANCE INDICATOR DOCUMENT

The document will be modified for monthly inspection for burrowing rodent activity with abatement and repair immediately or annually, in September, depending on the level of activity or damage to the BMP. Abatement and repair will follow recommendations outlined in the Burrowing Rodent Management guidelines developed by RBF/Dudek/and Fred Beams.

The MID has been revised to address emergent wetland species and issued as Version 11 to the Plaintiffs.

OMM COST

DATABASE

The OMM consultants continue on populating the database. Database population will be completed by September 15. The database schedule is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
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<tbody>
<tr>
<td>Database Software and File Issued</td>
<td>August 10, 1999</td>
</tr>
<tr>
<td>Begin Data Entry</td>
<td>August 11, 1999</td>
</tr>
<tr>
<td>Finish Data Entry and Submit Database to RBF</td>
<td>September 15, 1999</td>
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<tr>
<td>Begin Generating Database Reports</td>
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<tr>
<td>Submit Database Reports to Plaintiffs for Review and comment</td>
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<tr>
<td>Receive Comments from the Plaintiffs</td>
<td>October 7, 1999</td>
</tr>
<tr>
<td>Incorporate Comments and Post Reports on the Internet</td>
<td>October 20, 1999</td>
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</table>

VECTOR ACTIVITIES

SUMMARY OF VECTOR ISSUES FOR 7/29/99 – 8/12/99

SITE-SPECIFIC DETAILS ON VECTOR ACTIVITIES ARE PROVIDED IN THE OMM SECTION

DISTRICT 7

San Gabriel Valley Vector Control District

Monitoring

SGVVCD staff suspects breeding at two sites; however, ladder access is needed before sampling can take place. The flume housings for the drain inlet insert at the Rosemead MS was retaining water and breeding was observed.

Abatement

SGVVCD treated the flume housing at Rosemead MS Drain Inlet Insert with Golden Bear on August 5.
Greater Los Angeles County Vector Control District

Monitoring

The monitoring effort of August 3-4 showed breeding at only two BMP sites. The monitoring effort of August 10-11 showed that fewer BMPs contained standing water and that only three of these showed evidence of breeding.

Abatement

Three sites were abated since the last status report.

Los Angeles County West Vector Control District

Monitoring

A service agreement for monitoring and abatement services has not been signed. The agreement was presented to and approved by the District Board of Directors in July. The agreement was forwarded to Montgomery Watson the week of August 9 for review.

DISTRICT 11

County of San Diego Vector Surveillance and Control

Monitoring

On July 30, the CSDSVC requested that five sites be inspected on a monthly basis rather than the current weekly basis; the sites have been dry for some time. The monitoring frequency will revert to a weekly schedule in the event of rainfall or contact from the consultants, DHS or Caltrans.

CSDSVC observed mosquito breeding at two sites during this period. However, only limited mosquito breeding was observed at the sites and no action beyond that already taken has been recommended. Additionally, several Psychodid fly larvae were noted in the Media Filter at Kearny Mesa MS, though no action was recommended (Psychodid flies are not considered vectors).

Abatement

No abatement was carried out during this period.

DEPARTMENT OF HEALTH SERVICES

The Department of Health Services continues to visit the BMP sites and have been in contact with the vector control districts. The Abatement Practices Technical Report is now available.
for distribution (provided as an attachment to the Bi-Weekly Report). This memo identifies and delineates any detrimental effects that abatement practices may have upon water quality. Delivery of the draft study plan for the BMP Mosquito Production Study is scheduled for the week of 8/9/99.

The sites monitored by each VCD is summarized in the following table:

## Sites Monitored by Vector Control District

<table>
<thead>
<tr>
<th>Location</th>
<th>BMP Type</th>
<th>Monitor Consultant</th>
<th>Vector Control District</th>
<th>Activities</th>
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<tr>
<td>DISTRICT 7</td>
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<tr>
<td>I-605/SR-91</td>
<td>IB</td>
<td>MW/Law</td>
<td>GLACVCD</td>
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<tr>
<td>East of Orcas</td>
<td>CDS</td>
<td>MW/Law</td>
<td>GLACVCD</td>
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<tr>
<td>East of Filmore</td>
<td>EDB</td>
<td>BC</td>
<td>GLACVCD</td>
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</tr>
<tr>
<td>I-605/SR-91</td>
<td>EDB</td>
<td>BC</td>
<td>GLACVCD</td>
<td></td>
</tr>
<tr>
<td>Paxton Park &amp; Ride</td>
<td>MF</td>
<td>BC</td>
<td>GLACVCD</td>
<td></td>
</tr>
<tr>
<td>Metro MS</td>
<td>MCTT</td>
<td>BC</td>
<td>GLACVCD</td>
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<tr>
<td>Alameda MS</td>
<td>OWS</td>
<td>BC</td>
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<td>Eastern MS</td>
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<td>BC</td>
<td>SGVVCD</td>
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<td>Termination Park &amp; Ride</td>
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<td>Via Verde Park &amp; Ride</td>
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<td>Lakewood Park &amp; Ride</td>
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<td>Altadena</td>
<td>Bio Strip/TT</td>
<td>MW/Law</td>
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<td>Foothill</td>
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<td>SGVVCD</td>
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<td>LasFlores</td>
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<td>MW/Law</td>
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<td>MW/Law</td>
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<td>I-605/SR-91</td>
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<td>Cerritos MS</td>
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<td>I-5/I-605</td>
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<td>I-605/ Del Amo</td>
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DISTRICT 11
<table>
<thead>
<tr>
<th>Site Location</th>
<th>BMP Type</th>
<th>Inspectors</th>
<th>Dates</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-5/SR-56</td>
<td>EDB</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>August 2: first riprap-retaining basin holding water and breeding <em>Culex tarsalis</em> (egg rafts and 1st and 2nd instars at 0.1 larvae/dip). August 9: first riprap-retaining basin holding water and breeding <em>Culex pipiens</em> (2nd and 3rd instars as well as pupae at 0.4 larvae/dip). No treatment necessary on either date.</td>
</tr>
<tr>
<td>I-15/SR-78</td>
<td>EDB</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>None noted during routine inspection.</td>
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<tr>
<td>I-5/La Costa (West)</td>
<td>IB</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>August 2: standing water noted. August 9: site nearly dry.</td>
</tr>
<tr>
<td>I-5/La Costa (East)</td>
<td>WB</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>August 2: site breeding <em>Culex tarsalis</em> (1st, 2nd, and 3rd instars at 0.3 larvae/dip). August 9: site breeding <em>Culex tarsalis</em> (1st, 2nd, and 3-4th instars as well as pupae at 0.1 larvae/dip). No treatment necessary on either date.</td>
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<tr>
<td>I-5/Manchester (East)</td>
<td>EDB</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>None noted during routine inspection.</td>
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<tr>
<td>Kearney Mesa MS</td>
<td>StormFilter (Perlite/Zeoletic)</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>August 2 and 9: Site contained standing water; Psychodid larvae noted; no action recommended (Psychodid flies are not considered vectors).</td>
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<tr>
<td>Escondido MS</td>
<td>MF</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>August 2: west side of BMP contained approximately 5 inches of standing water; no evidence of mosquito breeding; larval and pupal psychodids (Diptera: Psychodidae) noted. August 9: water level decreased; no mosquito breeding noted.</td>
</tr>
<tr>
<td>La Costa Park &amp; Ride</td>
<td>MF</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>None noted during routine inspection.</td>
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<td>SR-78/I-5 Park &amp; Ride</td>
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<td>Melrose Ave/SR-78</td>
<td>Bio Swale</td>
<td>KLI</td>
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<td>1-5 Palomar Airport Road</td>
<td>Bio Swale</td>
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<tr>
<td>Carlsbad MS</td>
<td>Bio Strip/IT</td>
<td>KLI</td>
<td>SD Co VC</td>
<td>None noted during routine inspection.</td>
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**ENVIRONMENTAL ISSUES**

Dudek continues to perform the monthly inspection of the sites. A monthly inspection of the sites will be performed on August 16 and 17 with a Plaintiff representative.
Precipitation data for Los Angeles and San Diego for the month of August was obtained from NOAA (see Table, below).

**August 1999**

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</tbody>
</table>

The data presented here is as a reference only. The actual rainfall at individual BMP sites will vary from the values given in the table. The data presented above for Los Angeles is as of 4:00 p.m. for the preceding 24 hours on the date indicated. For San Diego, is as of 5:00 p.m. for the preceding 24 hours.
Memorandum

Date: August 10, 1999

To: Dean Messer, Ph.D.
    Larry Walker and Associates
    509 4th Street
    Davis, CA 95616

From: Vector-Borne Disease Section
       601 North 7th Street, MS 486
       P.O. Box 942732
       Sacramento, CA 94234-7320

Re: Mosquito Abatement Practices Technical Report

Overview:

The California Department of Transportation (Caltrans) is currently in the process of completing the development of the Stormwater Best Management Practice (BMP) Retrofit Pilot Program in Caltrans District 7 and District 11. One of the primary purposes of this project is to determine the pollutant removal efficiency of the BMPs as well as their operations and maintenance requirements. This includes the monitoring and abatement of any potential threats to public health such as mosquitoes. Unfortunately, many of these BMP devices are already producing mosquitoes that are known to transmit human pathogens and cause nuisance problems. As a result of this mosquito production, it has become necessary for some local vector control districts to take abatement action and eliminate this problem, usually by treating the BMP with larvicides. Caltrans has expressed some concern that these abatement practices may impair the efficiency of the BMPs in removing pollutants.

This report outlines the different abatement practices that are currently in use and those that may be implemented in the future to control immature mosquitoes. Also, this report will attempt to outlay the concerns raised by Caltrans regarding abatement practices and water quality issues. In addition, the impact of the abatement practices on the quality of water in the BMPs will be discussed. Information from relevant studies is included, however scientific studies on the effect of larvicides on water quality are few.

There are four vector control agencies involved in the BMP pilot project, each of which may employ one or more of four different larvicides to control immature mosquitoes. Although marketed under different trade names, the four larvicides are methoprene (Altosid®), *Bacillus thuringiensis israelensis* (VectoBac®, Technar®, Bactimos®), *Bacillus sphaericus* (VectoLex®), and the oil distillate (Golden Bear 1111®). A discussion of each larvicide, its mode of action, impact on non-target organisms and water quality, and its persistence in the water will be undertaken. Pesticide labels and the material safety data sheets will be provided for your reference.

With the exception of Golden Bear 1111, the larvicides listed above are alternatives to the “classical” chemical pesticides, and are generally referred to as biorational control agents. Unlike the chemical pesticides’ broad spectrum impact on non-target insects, the biorational larvicides exploit the insect's own biology, physiology, and ecology to achieve effective control...
with little or no adverse effect on the non-target insects and the environment. Furthermore, these larvicides are conventional control agents for mosquito vectors worldwide.

Abatement Practices for Controlling Immature Mosquitoes:

(a) Methoprene:

Methoprene is an insect growth regulator marketed as Altosid® by Zoecon Corp (Dallas, TX). Insect growth regulators control mosquitoes by interrupting normal metamorphosis, thereby preventing mosquitoes from emerging as blood feeding adults. Since methoprene is an analog of a mosquito juvenile growth hormone, it is not a toxin but a target-specific control agent. Methoprene affects only mosquitoes and will not harm mammals, birds, or beneficial predatory insects.

Generally, methoprene is a biodegradable compound with low environmental persistence. In the field, the half-life of methoprene is less than two days and it is rapidly degraded by sunlight and aquatic organisms. Methoprene has been shown not to leach beyond the top few inches of the soil even after repeated washes, and in any case, it biodegrades too rapidly to be of any concern. For methoprene to be an effective pesticide for mosquito control its persistence must be extended through slow-release formulations. Since we know that methoprene is biodegradable with a very short half-life, the only important concern for water quality will be the activity of the carrier material contained in the different formulations.

Altosid products come in several formulations, however they all fall in three main categories: Altosid liquid, Altosid pellets and Altosid briquets. Altosid liquid larvicide provides larvicidal control for up to 7 days. Altosid pellets provide 30-day control of successive broods of larval mosquito populations. The formulation with the longest residual effect is Altosid briquets. The Altosid briquets provide up to 150 days of larvicidal control. Each of the above formulations incorporates different inert materials as the main carrier of the active ingredient methoprene.

Altosid liquid has a short residual effect and is quite effective in small habitats prone to flash floods. These two properties make this Altosid formulation ideal for suppressing adult populations in this project. The liquid formulation consists of 5% methoprene and 95% carrier compounds. The bulk of the carrier compounds includes talc, water, and miniscule amounts of sodium hydroxide (NaOH - 2 mg/m$^3$), ethylenediamine (25 mg/m$^3$), acetic acid (25 mg/m$^3$) and BHT (10 mg/m$^3$), all at OSHA’s (Occupational Safety and Health Administration) recommended amounts (Zoecon Corp). Unfortunately, the details for the rest of the inert carrier compounds are under proprietary restrictions.

Altosid liquid will be the primary mosquito abatement product used at all the BMP sites by all the vector control agencies. The use of methoprene will allow for the measurement of larval mosquito abundance at the BMP sites, but prevent emergence of adult mosquitoes.

The Altosid pellets consist of 4% methoprene and 96% inert ingredients. Most of the inert compounds include corn cob and talc with miniscule amounts of calcium sulfate (Ca$_2$SO$_4$ - 10 mg/m$^3$). The Altosid briquets formulation consist of 2% methoprene and 98% inert compounds. Charcoal and corn cob form the main ingredients of the inert compounds. Similar to pellet formulation of Altosid, briquets contain 10 mg/m$^3$ calcium sulfate. Both the pellets and briquets are formulated to provide long term mosquito control by slow release of methoprene, however, by the nature of their formulations, pellets and briquets may be washed away by
intermittent stormwater runoffs, thus requiring reapplication after every storm. These formulations may be least ideal for the current abatement project.

(b) *Bacillus thuringiensis*:

*Bacillus thuringiensis israeliensis*, commonly referred to as *Bti*, is marketed as VectoBac (Abbott Labs, Chicago, IL) or as Teknar HP-D (Zoecon Corp., Dallas, TX). *Bti* is a naturally occurring bacterium that has a highly specific mode of action and forms an insecticide of minimal environmental concern. It provides effective control of mosquitoes and blackfly larvae with virtually no adverse effects to mammals, fish, or other wildlife when applied at recommended rates. *Bti* is an endotoxin that kills mosquito larvae after ingestion. Its toxicity is activated by partial digestion following ingestion by mosquito larvae. This pesticide has been in widespread use for 20 years and forms a major component of many vector control programs worldwide. In fact its low persistence and low environmental impact, together with other biorational larvicides, makes *Bti* the control agent of choice for mosquito control programs worldwide.

Ninety-eight percent of both VectoBac and Teknar larvicides are composed of inert ingredients. However, the identity of these ingredients is of proprietary importance, and unavailable for this report. Our assumption is that the inert ingredients, which primarily include water, talc, charcoal and corn cob, may not have any major impact on the chemical and physical properties of the BMP stormwater discharge. *Bti* should not form a major component of our abatement effort, and therefore, will have a minor or no effect on the water quality in the BMPs.

(c) *Bacillus sphaericus*:

*Bacillus sphaericus* marketed as VectoLex (Abbott Labs, Chicago, IL) is a commonly occurring bacterium found throughout the world in soil and aquatic environments. Its mode of action is not well known, however it is similar to *Bti*. It produces a protein endotoxin that is active against the larval stage and must first be ingested by larval mosquitoes and then partially digested in the midgut before it becomes activated. While many mosquito larvae are susceptible to this toxin, several species of *Aedes* have shown little or no susceptibility. *Bacillus sphaericus* has the unique property of being able to control mosquitoes in highly organic or polluted aquatic environments. Once applied, larval mortality may be observed as soon as a few hours after ingestion, but typically it takes as long as 2-3 days, depending on dosage to effect control. Based upon extensive field evaluations, VectoLex has been shown to persist 2-3 weeks after a single application. In fact, field evaluation has shown that *Bacillus sphaericus* may undergo limited recycling in certain organically rich environments, extending the period of larval control.

*Bacillus sphaericus* is non-toxic and non-pathogenic to all aquatic organisms except some species of mosquitoes. The VectoLex formulation consists of 7.5% bacteria with the remainder as inert compounds. Ground corn cob forms most of these inert ingredients, however the details on the other inert compounds are under proprietary confidentiality and unavailable for this report. Since VectoLex will not form a major component of our abatement program, its impact on water quality will be of no concern. However, *B. sphaericus* is environmentally safe and increasingly used by vector control programs around the world.
(d) GOLDEN BEAR 1111:

Mosquito Larvicide GB-1111, commonly known as Golden Bear, contains 98% aliphatic petroleum hydrocarbons (petroleum distillates). When applied in a mosquito breeding habitat, Golden Bear evenly coats the water surface suffocating mosquito larvae, pupae, and any other non-target aquatic invertebrates requiring access to air for respiration. This product is known to be toxic to fish and other aquatic organisms and may not be used in an environment that is inhabited by sensitive aquatic organisms. However, the effects of Golden Bear on salt marsh invertebrates and some vertebrates are mostly transient in nature and no residual activity is observed after a few days (Lawler et al., 1998).

Although Golden Bear has no active ingredients, it is the larvicide of choice when immediate control is necessary to eliminate potential emergence of mosquitoes or midges. It is the only larvicide that forms the last defense against mosquito pupae before they emerge into blood sucking adults. Since it is made up of aliphatic hydrocarbons, Golden Bear vaporizes within 2-3 days and its effect on the aquatic habitat is short-lived. The inert ingredients in the formulation of Golden Bear constitute less than 2% of the product, thus limiting the impact of inactive compounds on the water quality in the storm drains. The general disruption of aquatic dynamics and impact on the environment although minimal, makes Golden Bear less appealing for general use in this abatement program, however it is the only defense that vector control agencies around the world have against control of mosquito pupae.

Conclusion

Altosid liquid formulation, which contains methoprene, will be utilized as the primary larvicide for controlling immature mosquitoes at all BMP sites. The use of methoprene will allow for the efficacy of the abatement regimen in controlling larval mosquito populations, and ensure that data collected will be comparable between BMP sites over multiple vector control districts. Methoprene prevents adult emergence but will allow for the development of larval mosquitoes at each BMP site. Larval abundance at these BMPs will be monitored to evaluate the mosquito breeding potential of each BMP type.

Altosid liquid is diluted before application. Therefore, the final concentration of the inert carrier compounds should have an insignificant effect on the water quality in the BMP’s stormwater discharge. In addition, the inert ingredients in liquid Altosid are considered environmentally safe.

The scientific literature on the impact of biorational larvicides (methoprene, Bti, B. sphaericus) and the last resort larvicide (GB) on water quality is sparse. However, the insect growth regulators and biocontrol pesticides currently registered for mosquito control in California are the most environmentally safe compounds on the market. We therefore have no reservations on their use, especially where water quality issues are concerned. To emphasize their environmental safety, the World Health Organization (WHO) recommended the use of methoprene in drinking water to control container breeding mosquito vectors around the world (Zoecon Corporation). Furthermore, several studies have shown that control of flies breeding in livestock manure could be effectively controlled by incorporating methoprene into their daily diets (Moon et al., 1993).
References:


If you require further information, please contact Wakoli Wakesa, Ph.D., or Jeanne-Marie Lane at (909) 937-3448.

Vicki L. Kramer, Ph.D., Chief

Attachments
Groundwater Level Monitoring at I-5/La Costa Infiltration Basin Site

Basin Invert Elevation
6.89FT

Date of Measurement

Groundwater Elevation (feet)