California Regional Water Quality Control Board
North Coast Region
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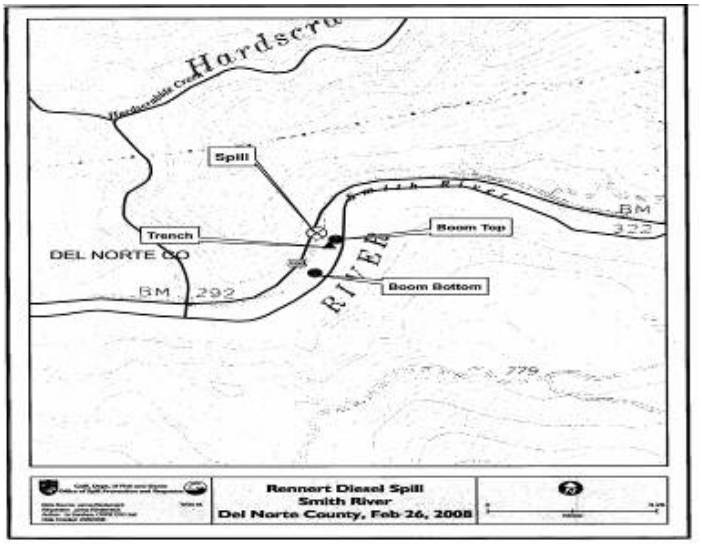
June 2008

Smith River Spill

Dave Parsons

This information item is to provide the status of the Smith River diesel spill cleanup project, known as the Renner Petroleum Spill. On February 20, 2008 a Renner Petroleum tanker truck hauling diesel fuel had an accident on Highway 199 near mile post 11.38, which is east of Hardscrabble Creek (Figure 1) and west of Gasquet. This incident spilled 4,000 gallons of red-colored diesel fuel into the ditch on the north side of Highway 199. The diesel fuel quickly infiltrated into the subsurface and day lighted downslope adjacent to the Smith River within 48 hours of the spill.



Initial emergency responders deployed sorbent pads at the spill site and a spill response team was mobilized from around the State to respond. Spill response team members include a diverse group of firemen, State law and regulatory enforcement personnel, responsible party-consultants and contractors, Caltrans, US Forest Service, and Del Norte County personnel.

Within a couple of days following the spill a large contingent of spill response personnel began hand-digging interceptor trenches on the downslope side of Highway 199 and deployed hard and soft booms along the edge of the gravel bar adjacent to the Smith River. These manual efforts used sorbent pads to soak up floating diesel fuel but dissolved phase diesel fuel needed to be recovered and treated using other techniques.

While the Highway 199 subsurface investigation and cleanup was occurring, it became evident that hand-digging the recovery trenches on the downslope side of Highway 199 could not attain the depth and width necessary to capture and recover the diesel fuel. Therefore, a small excavator (Figure 2) was delivered to the project site. It was driven down a steep slope onto the gravel bar and was used to expand, widen, and deepen the recovery trenches, and to perform “potholing” to determine extent of contamination.

Figure 2. Small Excavator on Gravel Bar.

While both of these operations were occurring daily meetings among spill response team members were conducted under the incident command structure with the California Highway Patrol being the Incident Commander (IC). Regional Water Board staff issued an initial Cleanup and Abatement Order (CAO R1-2008-0023) and Monitoring and Reporting Order (MRP R1-2008-0024) within 48 hours of the spill and staff was on-site soon after the spill occurred. On March 6, 2008 Regional Water Staff provided an informational presentation to Regional Water Board members at the Board Meeting in Fortuna. Revised CAO R1-2008-0036 and MRP R1-2008-0040 were issued on March 7, 2008 in response to more specific site conditions.

Because the diesel fuel had infiltrated into the fill prism below Highway 199 it was imperative to estimate the extent of subsurface contamination beneath Highway 199 using drilling and sampling technology and also to excavate the impacted soils and dispose of them at a permitted facility. One lane of Highway 199 was closed while this initial excavation occurred. The initial excavation began on March 10 but it was limited in extent because road fill prism stability was a concern. Both lanes could not be closed to excavate out all of the soil contamination because Highway 199 is a medical and economic lifeline to the north coast.

During the month of March, while all of the emergency response field activities were occurring reports with detailed site-specific information were submitted in response to CAO and MRP orders. In addition, more formalized remediation plans and documents were developed for implementation. Once Highway 199 fill prism stability determinations occurred a second excavation was performed not only to remove more contaminated soils but also to install a subsurface gallery of pipes which could be used to flush the subsurface with treated water. The treated water came from an extraction trench system at the base of the hill slope below Highway 199 within the gravel bar. The contaminated ground and surface water was extracted and pumped up to a treatment system located on the shoulder of Highway 199 (Figure 3).

Figure 3 Water Treatment System.

The treatment system has been in operation since March 25, 2008, processing contaminated influent at a rate of approximately 20,000 gallons per day on a 7-day a week schedule to levels below laboratory reporting limits. The treated water was then

pumped into the subsurface infiltration gallery system and this flushes diesel fuel contamination from the surface fill prism and it is collected in the downslope and on gravel bar recovery trenches where it is extracted and pumped into the treatment system for additional subsurface flushing.

On March 26-27 the emergency situation was deemed over and the CHP IC relinquished authority and Regional Water Board orders became the lead for the project. By April 2 revised CAO R1-2008-0044 and MRP R1-2008-0053 were in place. Throughout the month of March, April, and to date regular conference calls continued, site inspections occurred, and overall operations continued. Beginning in early May onsite soil washing commenced on the gravel bar. On-site contaminated soils were separated by size (plus and minus 2-inch) using additional mechanized equipment that was moved onto the gravel bar. The wash water was collected in the recovery trench located at the base of the Highway 199 hill slope and it is pumped up into the treatment plant and then beneficially reused by pumping the treated water into the infiltration gallery system and continued flushing of the subsurface.

To date, field operations continue at the project site, documents required by revised CAO R1-2008-0044 and MRP R1-2008-0053 are being submitted in a timely fashion, water and soil treatment efforts are working very well based on verifiable analytical data, communications occur a regular basis, and forward looking planning for implementation continues.

An update on recent enforcement actions and administrative civil liability (ACL) settlements. For June 12, 2008 Regional Water Board meeting.

Thomas Dunbar

ACL Complaint No. R1-2008-0026 was issued on February 25, 2008 to the **Mendocino County Water Works District No. 2 (Anchor Bay)** in the amount of $3,000 in mandatory minimum penalties for one violation of waste discharge requirements at the District's wastewater treatment facility. The District paid the $3,000 penalty on April 21, 2008 and submitted a signed waiver of the right to a public hearing on May 14, 2008.

ACL Complaint No. R1-2007-0081 was issued in September 2007 to **Gallo of Sonoma, Dry Creek Winery** in the amount of $10,000 for a discharge of leachate from a pomace compost pile into a tributary of Dry Creek, thence Russian River. On February 10, 2008, approximately 1,400 gallons of propylene glycol discharged from the winery facility into the tributary. The ACL Complaint was revised as ACL Complaint No. R1-2008-0052 on April 21, 2008 to include the second unauthorized discharge. The amount of the penalty remained at $10,000.

ACL Complaint No. R1-2008-0056 was issued on April 28, 2008 to the **University of California, Davis, Bodega Marine Laboratory** in the amount of $63,000 in mandatory minimum penalties for violations of waste discharge requirements at the Bodega Marine Laboratory, Sonoma County. A public hearing is scheduled for July 24, 2008.

Bacteria Transport Report Issued

Susan Warner

The University of California recently prepared and issued a report for the Regional Board titled "**Characterizing Freshwater Inflows and Sediment Reservoirs of Fecal Coliforms and *E. coli* at Five Estuaries in Northern California."** The study examined estuaries of the Russian River, Salmon Creek, Estero Americano, Walker Creek, and Lagunitas Creek. These five estuaries were selected to typify the diversity in estuary type, drainage area, land use, and water body beneficial uses in our region.

The findings revealed that, in general, mean fecal coliform concentrations were above water quality criteria for shellfish harvesting in all three flow seasons (wet season base flow, wet season storm flow, dry season base flow). However, it should be noted that the majority of the sampling locations were upstream and not in shellfish harvesting areas, and the actual mean bacterial concentrations in all five estuaries were close to shellfish harvesting criteria in the dry season base flow conditions.

Other findings reveal:

- Relative to the other estuarine systems in the project, Lagunitas Creek exhibited the highest counts of bacteria during dry season base flow conditions.

- A year-round reservoir of fecal coliforms and *E. coli* was identified in estuarine sediments.

- Concentration of fecal coliforms and *E. coli* was highest in suspended sediments compared to residual water or bottom sediments when bacterial concentrations were standardized across these three matrices on a per gram basis (cfu/g).

- In general, incoming tidal conditions, low summer streamflow conditions, sampling near the bottom of the water column, or locating a sampling site in a predominately saline location resulted in lower mean counts for fecal coliforms and commensal *E. coli* compared to the alternative condition.

- *E. coli* isolated from bottom sediments rarely matched the *E. coli* isolated from the water fraction or the TSS fraction, suggesting that biases may occur with DNA fingerprinting if bottom sediments are incorporated into a water sample for microbial source tracking efforts.

A follow-up presentation and discussion on the findings from the investigation of fecal coliform and E. coli concentrations and loads in these Marin and Sonoma County estuaries is scheduled for Wednesday May 28, 2008 from 9:00 am to 12:00 pm in the DCJ Room.

The project's final report is available at http://ucce.ucdavis.edu/files/filelibrary/2161/41255.pdf.

One Way to Change Your Personal Carbon Footprint

Susan Warner

Pacific Gas and Electric Company (PG&E) has started a new initiative to allow for individuals to start making changes that could reduce global warming. The new program, called ClimateSmart™, provides a voluntary option for PG&E customers to reduce their personal impact on climate change. When a person joins the program, PG&E calculates the amount needed to make the greenhouse gas emissions associated with his or her home

energy use “neutral” and will add this amount to the monthly energy bill. PG&E estimates that the typical PG&E residential customer will pay less than $5 per month for the ClimateSmart program.

PG&E then uses 100% of the payments for the ClimateSmart program to directly fund new greenhouse gas emission reduction projects in California. PG&E invests these funds in a range of innovative projects, such as projects that capture methane gas from dairy farms and landfills as well as conserving and restoring California's forests. One of the first projects for PG&E under this program is the Garcia River Forest in Mendocino County.

The ClimateSmart™ program is purchasing greenhouse gas emissions reductions in the Garcia River watershed in southwestern Mendocino County. They contract for this carbon offset project with The Conservation Fund, an environmental nonprofit group. The Garcia River Forest, managed by the Conservation Fund, is a large portion of the watershed, and conservation efforts help protect the fragile habitat and river corridors of the basin, providing habitat to 28 listed species including Coho salmon, steelhead trout, and other species within the drainage.

The PG&E project will reduce greenhouse gas emissions by protecting trees that would otherwise have been harvested and that absorb and trap carbon. With PG&E’s support, the Garcia River Forest will sequester 40,000 tons of carbon annually for the next five years within the 23,780-acre Garcia River Forest. The carbon offset efforts are verified by a professional forester as offsets above and beyond the existing conservation easement held by The Nature Conservancy, ensuring the permanent protection of even more carbon-sequestering trees. As the owner and manager of Garcia River Forest, The Conservation Fund states that non-profit management of forests under sustainable forestry guidelines can be both economically and environmentally sustainable. By selling carbon offsets for conservation of the forest, the Fund generates revenue to support ongoing forest and stream restoration work and preserve jobs within the community.

California has an ambitious goal of reducing greenhouse gas emissions to 1990 levels by 2020, and Mary Nichols, Chairman of the California Air Resources Board (CARB), indicates that the Garcia River project, among others, will help meet that goal and demonstrate “that corporations can make progressive decisions about investing in real, measurable reductions of greenhouse gas emissions."

For more information on PG&E’s program (and to calculate how much your bill would change if you wish to enroll in the program) visit http://www.pge.com/climatesmart/.

Low Impact Development—what is it and how does it come about

Susan Warner

In last month’s newsletter issue, Cat Kuhlman identified an area for focusing additional coordination through the local planning process: encourage low impact development (LID) with proper design and management of flood control facilities. In this article, we’ll example the fundamentals of LID design and management.

In essence, LID is an alternative method of land development over the traditional drainage re-routing and other hydrologic changes associated with construction, hardscape, and paving projects. LID seeks to maintain the natural hydrologic character of the site or area so that the movement of water through a watershed continues to reflect the balance developed over eons of time before the system was altered.

Vegetated swale

We all know that the movement of water is altered with the construction of hardened surfaces such as roads, parking lots, and rooftops. In particular, rainfall interception by vegetation and movement through permeable soils is significantly altered in traditional construction with the result that the amount of runoff increases and infiltration decreases. With these changes come increased peak flow rate and volume, and pollution levels in stormwater runoff.

LID designs are intended to work with the natural landscape and hydrology to minimize the infiltration/runoff changes. LID practices use source control, onsite rainfall retention, and other techniques in place of more traditional methods that funnel water via pipes into local waterways. Improved site design and specific management measures are incorporated into LID developments specifically to address stormwater runoff in a more holistic way.

The State Water Resources Control Board has directed California Water Boards' staff to consider sustainability in all future policies, guidelines, and regulatory actions, and LID is one such sustainable practice. LID benefits water supply and contributes to water quality protection, and is being supported by the Water Boards in various ways:

- Funding LID projects through the Division of Financial Assistance;
- Funding through CWA 319 funds to provide for further researching applicability of Impervious Surface Analysis Tool (ISAT) for land use planners and for the California Water and Land Use partnership (CaWaLUP) Center at U.C. Davis;
- Regulation through site-specific and general permits;
- Providing advocacy and outreach to local governments through the Water Board's Training Academy and regional workshops; and
- Researching how to incorporate LID language in to Standard Urban Storm Water Mitigation Plan (SUSMP) requirements.

The State Board and the Water Academy sponsored development of a 2007 report, "A Review Of Low Impact Development Policies: Removing Institutional Barriers To Adoption." This report (http://www.swrcb.ca.gov/lid/docs/ca_lid_policy_review.pdf) was developed by the Low Impact Development Center in Beltsville Maryland (www.lowimpactdevelopment.org), and contains details on LID pertinent to California activities and our regulatory arena.

The Water Boards are key partners of the California Water and Land Use Partnership, or CaWaLUP (http://cawalup.usc.edu/) project. CaWaLup is a collaborative effort made up of government agencies, non profits, and academia. CaWaLup partners are working to improve how water resource implications of land use are considered in California's local government decisions. For more information please go to http://cawalup.usc.edu/. LID and

smart growth actions are principal components of CaWaLup.

Many of the LID principles are focused on minimizing soil changes and maximizing vegetation retention:

- Minimizing the impervious footprint of the project
- Minimizing soil compaction
- Minimizing disturbances to natural drainages (e.g., natural swales, topographic depressions)

Other components include re-thinking project designs:

- Draining a portion of a site's impervious areas into pervious areas prior to discharge to streams or drainageways.
- Properly designing and constructing the pervious areas to effectively receive and infiltrate or treat runoff from impervious areas.
- Constructing a portion of walkways, trails, overflow parking lots, alleys, or other low traffic areas with permeable surfaces.
- Conserving natural areas, including existing trees, other vegetation, and soils.
- Constructing streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided that public safety and a walkable environment for pedestrians are not compromised.
- Using green swales in median strips, and similar roadway designs.

In addition, innovations such as porous concrete and other paving innovations are encouraged under LID projects. Some municipalities have been encouraging "green roofs." Vegetated or green roofs are constructed with a protective waterproof underlayer over which grows living plants rooted in soil on top of the structure. Some green roofs have a foot or more of soil depth (requiring strong structural support), while other, less intensive roofs have only a few inches of soil and are vegetated with hardy plants.

Green roof photograph courtesy of Ecogeek.

Portland, Oregon, encourages green infrastructure techniques, and requires new city-owned buildings to have a green roof covering 70% of the roof area. As an incentive for other buildings, a zoning bonus that allows additional square footage is available for those that install a green roof. The city will also allow up to a 35% discount in the stormwater utility for properties with on-site stormwater management.

LID has been applied to government, residential, and commercial development and redevelopment, and has proven to be a cost-efficient and effective method for managing runoff and protecting the environment. Municipal and County planning agencies in the North Coast are beginning to implement LID programs in their urban projects, and continued close coordination with these entities will aid in furthering LID practices.