THE CITY OF SAN DIEGO

REPORT TO THE CITY COUNCIL

DATE ISSUED: October 7, 2006 REPORT NO: 06-142

ATTENTION: Natural Resources and Culture Committee
Docket of October 11, 2006

SUBJECT: Chollas Creek Dissolved Metals Total Maximum Daily Load Project

REFERENCE: Report to City Council #05-194, presented at the September 21, 2005 Natural Resources and Culture Committee Meeting

REQUESTED ACTION: No action is requested; this is an informational item only.

SUMMARY:

Background

The State of California implements a number of storm water-related provisions of the Federal Water Pollution Control Act (also known as the "Clean Water Act") through the State's Porter-Cologne Water Quality Act (Porter-Cologne). Porter-Cologne established the State Water Resources Control Board ("State Board") and nine Regional Water Quality Control Boards ("Regional Boards"). The Regional Water Quality Control Boards are charged with preparing "Basin Plans" for areas under their jurisdiction. Basin Plans establish "Beneficial Uses" for the "receiving water bodies" identified in the Basin Plan. The Basin Plans also establish quantitative and qualitative objectives ("Water Quality Objectives" or "WQOs") for a number of different pollutants, compliance with which is intended to facilitate enjoyment of the corresponding beneficial uses by the public.

When pollutants exceed the water quality objectives established by the Basin Plan, the State Board is obliged to list them as "impaired" for the particular pollutant(s) pursuant to Section 303(d) of the Clean Water Act (hence, receiving water bodies can be listed for more than one pollutant). Once listed on this "303(d) list", Regional Boards are obliged to promulgate Total Maximum Daily Load (TMDL) regulations for the pollutant(s) in the receiving water body. TMDLs represent the numerical limit on pollutants which can be discharged into the listed receiving water body. Significantly, dischargers must use "Best Available Technology" and reduce pollutant loading within a specified

Implementation Schedule in order to be in compliance. This is different from the compliance standard in the City's permit for storm water discharges, which can generally be complied with using the "Maximum Extent Practicable" standard.

The lowest 1.2 miles of Chollas Creek is listed as impaired for bacteria and dissolved copper, dissolved lead, and dissolved zinc. All San Diego beaches are listed as impaired for indicator bacteria (although most are currently proposed by the State to be de-listed). The San Diego Regional Board has developed two TMDLs to address these impairments: the "Chollas Creek Dissolved Metals TMDL" (the "metals TMDL") and the "Bacteria I for Beaches and Bays TMDL" (the "bacteria TMDL"). The Regional Board is also developing other TMDLs at this time for water bodies throughout the City.

Although only the beaches and lower-most reach of Chollas Creek are listed as impaired, the TMDLs prepared by the Regional Board regulate water quality throughout the watershed upstream of the impaired areas because of the "tributary rule". The San Diego Regional Board's interpretation of the tributary rule is that compliance with the WQOs is required before runoff is discharged into receiving waters. Therefore, the bacteria TMDL actually applies numerical standards to runoff from the majority of land in the City (all lands upstream of and within the watershed of the impaired beaches and bays) and the metals TMDL applies numerical standards to runoff from all land within the Chollas Creek watershed.

Compliance with both TMDLs is required within 10 years of final adoption by the federal Environmental Protection Agency; the metals TMDL has additional compliance milestones, including a requirement that exceedances of WQOs be reduced by 50% by Year 7.

The Chollas Creek watershed is comprised of approximately 16,000 acres, reaching from the mouth of the creek south of the Coronado Bridge near the NASSCO shipyard and extending to the easterly city limits at the cities of La Mesa and Lemon Grove. It is roughly bounded by El Cajon Boulevard to the north and Imperial Avenue to the south. Over 800 storm drains outfall into the receiving waters in the watershed within the City of San Diego.

Discussion

In order to determine what efforts would be required by the City in order to comply with the TMDLs, staff commissioned a report by its consultant Weston Solutions, Inc. (Attachment A). The report has been peer reviewed by another city consultant, MWH, Inc., Coastkeeper, and the Sierra Club. Key findings from the report are highlighted below.

Sound storm water management policies are rightfully directed towards source control, since keeping pollutants out of storm water is generally recognized as being much more cost effective than removing them from storm water. However, concentrations of bacteria, copper, lead, and zinc in excess of water quality objectives result from

currently-legal activities. City staff has concluded that the only way of complying with the TMDLs within 10 years is by either keeping runoff from reaching receiving waters (e.g., via infiltration) or by treating the runoff prior to it reaching the receiving waters. This conclusion is based on the ubiquitous nature of the metals (e.g., copper from brake pads, shingles, and indoor plumbing systems; lead from vehicular exhaust and tire weights; zinc from vehicular tire wear and galvanized metal surfaces), the deposition of these pollutants on the ground from the air, and the limitations of currently-known structural and non-structural Best Management Practices for dissolved metals and bacteria. Few highly-advanced treatment processes are available to achieve the required reductions in concentrations of metals and bacteria.

City staff has also made the following conclusions regarding the location and nature of the Best Management Practices that will be required to comply with the TMDLs:

1. Dry weather flows must be treated or replaced with potable water because a mitigation measure in the Regional Board's CEQA documentation requires that dry weather flows be maintained in order to not impact existing downstream hydrology and wetland vegetation. Approximately two-thirds of the storm drain outfalls in the watershed discharge dry weather flows.

2. Staff believes that natural infiltration possibilities in the watershed are limited. Mapping by the Natural Resource Conservation Service indicates that soils in the watershed are not very permeable. In "Current Distribution and Historical Extent of Vernal Pools in Southern California and Northern Baja, Mexico" (1996) Ellen Bauder and Scott McMillan hypothesize that vernal pools were once supported in the majority of the watershed, further indicating that soils in the watershed are largely impermeable.

3. Comments from the Sierra Club and Coastkeeper highlighted the potential for this mapping to have been conducted at too gross of a scale to identify site-specific infiltration opportunities. Staff recognizes this possibility and is therefore conducting a review of 12 geotechnical reports that have been completed for development projects in the watershed. A summary of the reviews will be available on October 11, 2006. Comments also identified the possibility of excavating native materials at infiltration sites to greater depths, backfilling with gravel and/or compost, and covering the infiltration "pit" to facilitate infiltration over a longer period of time. The Weston report incorporated this concept but did not evaluate a reduced acreage for treatment facilities based on an increased usage of such pits. The "balance" between infiltration and treatment can only be determined on the basis of site-specific soil investigations. Although maintenance requirements would not be expected to be high, it is unlikely that structures could be built on top of such infiltration sites.

4. Flows to be treated must be treated immediately above the outfall to receiving waters because bacteria in excess of that allowed by the bacteria TMDL will re-grow in the treatment facility outfall. In the Chollas watershed, the land above

outfalls is typically privately owned and developed. The size of these facilities is driven by the need to equalize storm water in lined (to prevent slope stability problems) basins, the need to treat the water within 72 hours (for vector control purposes), and the size of the treatment facility itself.

5. While the feasibility of pumping storm water during rain events uphill to publicly-owned lands is questionable, the Weston report does assume that storm water from 65% of the outfalls in the watershed can be pumped uphill to publicly-owned lands within 500 feet of the outfall for infiltration. The public works needed to pump storm water flows uphill and the maintenance needed to keep such a dedicated system operational would be substantial.

The proposed TMDLs do not identify a "design storm", a basic assumption used to design the size of storm water conveyance and treatment facilities needed. The bacteria TMDL provides for dry weather exceedances but not wet weather exceedances. Therefore, compliance with the bacteria TMDL is required regardless of storm size and there is no basis for designating a design storm based on the bacteria TMDL. The California Toxics Rule, upon which the metals TMDL is based, provides for one exceedance every three years. Therefore, the Weston report bases its analysis of the treatment works needed on a 1.4-inch and a 2.0-inch storm. These storm sizes and the resulting capacity of treatment facilities could be insufficient to comply with the bacteria TMDL.

The metals TMDL is further along in the Regional Board approval process than the bacteria TMDL; however, staff has made comments to the State and Regional boards on both as follows:

- May 12, 2005 letter regarding the metals TMDL and CEQA analysis (Attachment B)
- January 6, 2006 letter regarding the metals TMDL and CEQA analysis (Attachment C),
- February 3, 2006 letter regarding the bacteria TMDL and CEQA analysis (Attachment D),
- September 18, 2006 letter regarding the bacteria TMDL and CEQA analysis (Attachment E), and
- September 25, 2006 letter regarding the metals TMDL and CEQA analysis (Attachment F).

Although the data used as the basis for the letters has become more refined, the issues raised in the letters have remained consistent: 1) Regional Board staff underestimates the level of public works needed to comply with the TMDLs and fails to identify the significant environmental effects (e.g., the removal of existing development for construction of infiltration or treatment facilities) associated with compliance activities in its CEQA analysis and 2) the 10-year implementation schedule for compliance is infeasible and sets up the City for $27,500 per day fines associated with violations of the

Clean Water Act. For example, implementation schedules for similar TMDLs approved by the Los Angeles Regional Board allowed up to 22 years for compliance.

Based on the most recent data, the Weston report concludes that strict compliance with the TMDLs in the Chollas watershed via treatment would require 460-655 acres of land (including 219-312 acres which are currently privately-owned and would need to be acquired) and the expenditure of $750 million to $1.4 billion.

While additional infiltration could be achieved under other city rights-of-way and on private properties (via, for example, incentivized use of rain barrels as well as infiltration), compliance without construction of a number of treatment facilities is not considered likely. This is due to the fact that, unlike a number of other TMDLs, compliance with the metals TMDL is based on the concentrations of metals in the discharges rather than the mass of pollutants removed from the receiving waters. Therefore, regardless of the mass of load reductions achieved, storm water that cannot be infiltrated must be treated or mixed with treated water to reduce the concentrations of pollutants in resulting mixture to levels below the WQO.

In order to avoid the significant environmental and neighborhood impacts associated with strict compliance, the Weston report and staff recommend implementation of a less intensive program. Staff concurs that initial efforts towards compliance should be based on the "reasonably foreseeable alternative means of compliance" identified in the Regional Board's CEQA analysis (Attachment G). These measures include:

- collecting additional water quality data to define areas of highest pollutant loading,
- pursuing state legislation to eliminate copper from brake pads,
- removing certain beneficial uses from Chollas Creek in the Basin Plan,
- enhanced street sweeping with vacuum-assisted sweepers,
- increasing regulation on high priority target sources,
- construction of infiltration facilities on publicly-owned lands, and
- encouraging property owners to infiltrate storm water on their own land.

The primary goal of this preferred alternative is to maximize the use of non-structural BMPs and structural BMPs on city-owned property before building expensive and land-consuming treatment systems on privately- and publicly-owned property. While data suggests that no single BMP other than diversion or treatment will result in compliance with the TMDLs, it is conceivable that a "train" of less-intensive BMPs will result in compliance in sub-drainages with lower pollutant concentrations. However, this preferred approach cannot be completed in 10 years. At the November 8, 2006 Regional Board hearing on the metals TMDL, staff intends to request:

- that the Regional Board consider adopting an "integrated" TMDL to address all impairments in the Chollas Creek watershed at one time,

- that the Regional Board adopt a 20-year implementation schedule in order to implement the preferred alternative without risking years of non-compliance and the associated fines and potential lawsuits,
- that the Regional Board recognize the true "reasonably foreseeable alternative means of compliance" and the impacts therefrom in its CEQA documentation.
- that the Regional Board include a "re-opener" provision in the metals TMDL in order to allow the Regional Board to re-consider the metals TMDL after it has the opportunity to evaluate the effectiveness of the less invasive BMPs.

FISCAL CONSIDERATIONS:

Costs of complying with the TMDL using non-treatment BMPs are unknown because it is unknown whether the removal efficiency of combinations of BMPs will be sufficient to meet the TMDL loading reduction requirements. Similarly, the cost of supplanting treatment facilities with infiltration facilities is unknown because the amount of infiltration that can be achieved is unknown without site-specific soil information. Therefore the only costs developed to date are costs for complying with the TMDL through treatment. The cost for compliance using equalization, activated carbon, and sand filters is estimated as follows for two different sized design storms:

	1.4", 6-hour storm	2", 6-hour storm
Construction of Treatment Facilities:	$400 million*	$900 million
Pumping and Conveyance to Public Land	not included	not included
Total Acreage Required	460**	655**
Minimum Privately-owned Acreage Required	219**	312**
Private Land acquisition (@ $1.6 million/acre)	$350 million	$500 million
TOTAL	$750 million	$1.4 billion

*assumes storm drain flows can be combined for treatment at fewer treatment sites
**does not include potentially desirable buffer areas but assumes pumping to public lands for infiltration where possible (500-foot maximum distance)

According to Appendix E of the Regional Board's Technical Report on the TMDL, low and high density residential land uses account for almost 64% of all land within the Chollas Creek watershed. Therefore, it is currently anticipated that acquisition of 219 to 312 acres of land would equate to acquisition of 140 to 200 acres of land which is currently developed with housing. Assuming an average of 10 dwelling units per acre (4,000-square-foot lots are common in the watershed, this equates to the loss of 1,400 to 2,000 dwelling units. According to U.S. Census Data, the average dwelling unit in San Diego houses 2.6 people. The loss of 1,400 to 2,000 dwelling units would therefore result in the displacement of 3,640 to 5,200 residents.

PREVIOUS COUNCIL and/or COMMITTEE ACTION:
In May, 2006, Council authorized staff to appeal the original Regional Board approval of Chollas Creek Dissolved Metals TMDL.

COMMUNITY PARTICIPATION AND PUBLIC OUTREACH EFFORTS:
Staff has solicited peer review on the Weston report from Coastkeeper and the Sierra Club.

KEY STAKEHOLDERS AND PROJECTED IMPACTS:
Property owners, business owners, and residents within the Chollas Creek watershed are all key stakeholders who could be subject to impacts ranging from inconvenience during construction activities to having their property acquired for storm water treatment and related facilities.

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Attachments:

A. "Chollas Creek TMDL Source Loading, Best Management Practices, and Monitoring Strategy Assessment", Weston Solutions, Inc., September, 2006
(Not available on the Web can be obtained at the City Clerk's Office)
B. May 12, 2005 letter from City regarding the metals TMDL and CEQA analysis
C. January 6, 2006 letter from City regarding the metals TMDL and CEQA analysis
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