

From: Trey Driscoll <tdriscoll@dudek.com>

To: richardalcom2455 <richardalcom2455@gmail.com>

Cc: jacumbawater <jacumbawater@att.net>; Patrick Rentz <prentz@dudek.com>

Subject: Source Protection of JCSD Wells

Date: Wed, Nov 2, 2016 4:11 pm

Richard,

The use of recycled asphalt pavement (RAP) as road base material is an increasing trend in the road construction business. RAP contains aggregate and bituminous asphalt, a material that contains heavy metals and poly-aromatic hydrocarbons (PAHs). Heavy metals and PAHs are pollutants that have been identified as carcinogenic, mutagenic, and teratogenic (interferes with embryo development). When subject to precipitation or runoff, these heavy metals and PAHs have the ability to leach out of the road base and infiltrate into the water table.

According to the 1986 Safe Drinking Water Act Amendments, the areas to be assessed and protected for ground water sources (wellhead protection areas) are defined as "the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field". For drinking water sources that have been classified as ground water under the direct influence of surface water (GWUDI), the source area should include the land area within the watershed boundaries.

As a minimum standard, I would use the calculated fixed radius (CFR) from the California Drinking Water Source Assessment and Protection Program to define protection zones for JCSD wells.

Well 4 Minimum Protection Zones (as GWUDI should include land area within Boundary Creek watershed boundary; distances are provided for reference for land use compatibility)

Zone A - Microbial/Direct Chemical Contamination Zone = 1,495 feet

Zone B5 (5 Years) - Chemical Contamination Zone = 2,364 feet

Zone B10 (10 Years) - Chemical Contamination Zone = 3,343 feet

Note: Distances calculated by fixed radius method assuming production rate of 200 gpm, 20 feet of screen and effective porosity of 0.2 (entire watershed shall be considered for groundwater wells under the direct influence of surface water.

As a conservative measure, I would strongly discourage placement of RAP within Zone A (1,495) and even Zone B5 (2,364 feet).

I suggest that you request from the contractor offering the material to provide leach testing results that would provide a more definitive analysis of the specific RAP as I notice RAP is being placed all over the Boundary Creek watershed.

Cheers,

Trey

Sources:

Drinking Water Source Assessment and Protection (DWSAP) Program. January 1999.

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwsapguidance/DWSAP_document.pdf

Leaching Characteristics of Recycled Asphalt Pavement Used in Unbound Road Base. May 2012.

[https://www.wisconsin.edu/waste-research/download/2012_student_reports/12%20MSN%20Shedivy%20%20Meier%20leaching%20of%20asphalt%20pavement%20\[1\].pdf](https://www.wisconsin.edu/waste-research/download/2012_student_reports/12%20MSN%20Shedivy%20%20Meier%20leaching%20of%20asphalt%20pavement%20[1].pdf)

TREY DRISCOLL, PG #8511, CHG #936

PRINCIPAL HYDROGEOLOGIST

DUDEK

ENGINEERING + ENVIRONMENTAL

605 THIRD STREET

ENCINITAS, CALIFORNIA 92024

T 760.479.4154 F 760.942.5206 C 760.415.1425

WWW.DUDEK.COM

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