

**MAGNOLIA POWER PROJECT
APPLICATION FOR CERTIFICATION
RESPONSE TO CEC DATA REQUESTS
01-AFC-06**

Technical Area: Public Health

Data Request 156 Rev: As a result of water data requests, the MPP may now use 100 percent reclaim water in the cooling tower. This use of reclaimed water impacts the health risk assessment for the facility. The CEC did not specifically request a revised health risk assessment however, URS anticipates one will be required. Therefore, a revised health risk assessment for the cooling tower based on 100 use of reclaimed water is below.

Response:

Due to recent changes in the MPP water supply for the cooling tower, the health risk assessment has been updated. The previous health risk assessment submitted to the CEC in August of 2001 assumed the use of 50% reclaimed water and 50% ground water. However, to maximize the use of reclaimed water, the cooling will now operate with 100% reclaimed water. Additionally, minor changes have been made to the PAH emissions as response to South Coast Air Quality Management District (SCAQMD) comments. The revised PAH emissions, as well as revised cooling tower emissions were included as part of a submittal to the SCAQMD on November 15, 2001. A copy of this analysis was also forwarded to the CEC. The health risk calculations submitted to the SCAQMD were for compliance with Rule 1401. In the analysis each source was modeled separately and health risks were calculated on a source-by-source basis. However, the CEC requires that a health risk assessment include all sources and cumulative health risks be calculated. To meet these requirements a revised health risk assessment, including revised cooling tower emissions and updated PAH emissions, to meet CEC requirements has been completed. Revised emissions for the cooling tower and the turbine are summarized in Tables 1, 2 and 3. The auxiliary Boiler emissions have also been included.

The ISCST3 model was used in conjunction with the ACE2588 model to simulate atmospheric dispersion and perform multi-pathway health risk calculations, respectively. Health risk assessment results are summarized in Table 4. Both the chronic and acute hazard indices are below the significance impact level on

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1.0. Due to an increase in estimated carcinogenic PAH emissions, the cancer risk has also increased slightly to 1.1 in-one-million). PAH emissions account for the majority of the cancer risk from the proposed MPP. As discussed in the November 15, 2001 submittal to the SCAQMD, an examination of the individual mean emission factors (EFs) from CATEF showed that carcinogenic PAHs represent about 20% of the sum of the CATEF PAH EFs (minus naphthalene). In addition, the health risk assessment assumed a cancer potency equal to Benzo (a) Pyrene (BaP) for all PAHs (minus naphthalene). This is also a conservative assumption because BaP is more potent than the majority of PAH carcinogens. Therefore, the methodology used in the analysis is extremely conservative. It can be concluded that if further refinements were made to this analysis, the cancer risk due to MPP emissions would be less than one-in-one million.

TABLE 1
Magnolia Power Project
Revised Cooling Tower Emissions¹

Size Categories from EPRI Data		Droplet Volume (μm^3) ²	EPRI % Smaller	Particle Diameter (μm)
Low	Hi			
10	20	524	0.000	1.224
20	30	4189	0.196	2.448
30	40	14137	0.226	3.671
40	50	33510	0.514	4.895
50	60	65450	1.816	6.119
60	70	113097	5.702	7.343
70	90	179594	21.348	8.566
90	110	381704	49.812	11.014
110	130	696910	70.509	13.461
130	150	1150347	82.023	15.909
150	180	1767146	88.012	18.357
180	210	3053628	91.032	22.028
210	240	4849048	92.468	25.699
240	270	7238229	94.091	29.370
270	300	10305995	94.689	33.042
300	330	14137167	96.288	36.713
330	400	18816569	97.011	40.384
400	450	33510322	98.340	48.951
450	500	47712938	99.071	55.070
500	600	65449847	99.071	61.188
600	700	113097335	100.000	73.426

Assumed TDS	720	ppm
Cycles of conc.	5.6	
CT TDS	4032	ppm

38.021

¹ Based on Electric Power Research Institute (EPRI) test cell in Houston, Texas for a 0.0003% drift fraction.

² To be conservative, the droplet volumes were calculated based on the low end of droplet diameter range.

Table 2
Cooling Tower Emission Rates

Drift rate	900 gpd
Inlet water TDS	720.00 mg/L
Cycles of Concentration	5.6
Cooling Tower TDS	4032.0 mg/L
Correction Factor ¹	0.3802
Emissions	0.0604 g/s
Emissions per cell	0.010075 g/s

¹ Ecodyne Cooling Products Division
G.K. Wistrom and J.C. Ovard.

Table 3
PM10 Concentrations

Maximum 24-hour Average ¹	2.458	µg/m ³
Annual Average	0.252	µg/m ³