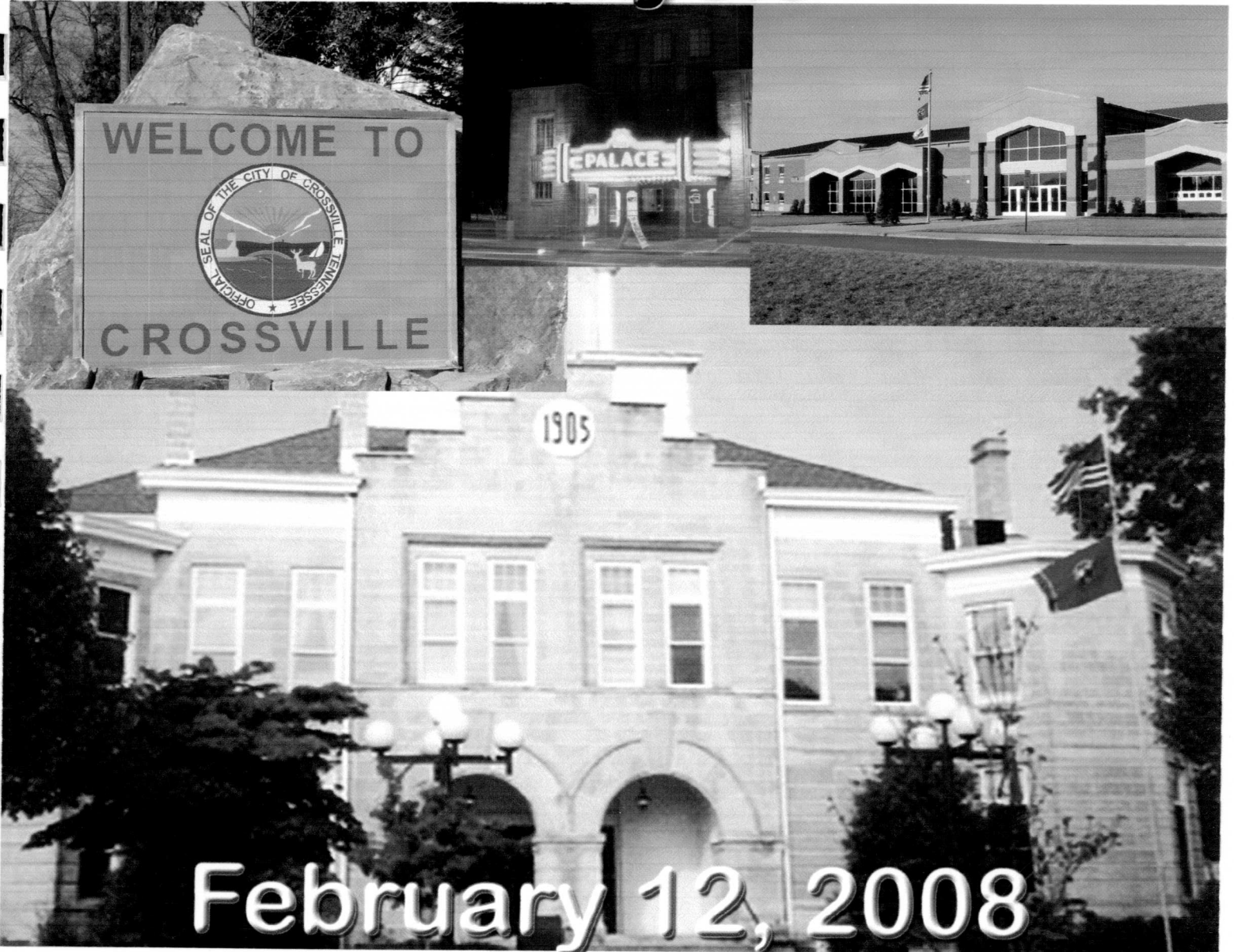


# City of Crossville, TN Tansi Water Analysis



February 12, 2008

# **FECES**

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Field's Engineering Consultant Services  
[www.fieldengineering.net](http://www.fieldengineering.net)

## Goals

- To determine the amount of water which can be transferred from Lake Tansi to Meadow Park Lake without affecting the normal pool level (NPL) of Lake Tansi.

# Lake Tansí Water Analysis

February 12, 2008

Prepared for:

The Crossville City Council

By: Field's Engineering Consultant Services  
Brett D. Wyatt &  
Barry R. Field, P.E.



## Facts

- Avg. Annual Precipitation = 53 in.
- Total Drainage Area (Lake Tansi) = 2,800 acres
- Surface Area of Lake is approximately 400 acres
- Majority of Drainage Area is Wooded or Grass-covered

## Normal Pool Level (NPL)

- Before we get started, it is important that we all understand the term Normal Pool Level. The level is defined as the level of the water surface at an elevation equal to the overflow elevation.

# Available Water in Lake Tansi

- Precipitation directly into the lake
- Runoff
- Base flow

# Precipitation Directly into the Lake (approx. 400 acres)

<u>Month</u>	<u>Avg. Precipitation (in)</u>	<u>Avg. Vol. added to lake (gal)</u>
January	5	54,304,800
February	4.8	52,132,608
March	5.5	59,735,280
April	4.1	44,529,936
May	4.4	47,788,224
June	4.3	46,702,128
July	5	54,304,800
August	3.6	39,099,456
September	3.4	36,927,264
October	3.3	35,841,168
November	4.3	46,702,128
December	5	54,304,800



# Runoff from Grass & Woodlands (approx. 2200 acres)

Calculated by the SCS Curve Number Method

<u>Month</u>	<u>Accumulated Runoff (in)</u>	<u>Accumulated Runoff (gal)</u>
January	2.37	141,326,603
February	2.21	131,857,339
March	2.77	165,521,686
April	1.67	99,844,770
May	1.89	113,331,317
June	1.82	108,794,214
July	2.37	141,326,603
August	1.31	78,289,796
September	1.17	70,042,733
October	1.11	66,010,066
November	1.82	108,794,214
December	2.37	141,326,603

# Runoff from Streets & Rooftops (approx. 200 acres)

Calculated by the SCS Curve Number Method

<u>Month</u>	<u>Accumulated Runoff (in)</u>	<u>Accumulated Runoff (gal)</u>
January	4.76	25,866,789
February	4.56	24,782,457
March	5.26	28,578,164
April	3.87	20,988,597
May	4.16	22,614,256
June	4.07	22,072,318
July	4.76	25,866,789
August	3.37	18,280,400
September	3.17	17,197,675
October	3.07	16,656,459
November	4.07	22,072,318
December	4.76	25,866,789

# Base flow into Lake

<u>Month</u>	<u>Base flow into Lake (gal)</u>	<u>Percentage of Measured Base flow</u>
January	42,573,168	100% Base flow
February	39,826,512	100% Base flow
March	42,573,168	100% Base flow
April	37,079,856	90% Base flow
May	34,058,534	80% Base flow
June	26,779,896	65% Base flow
July	23,415,242	55% Base flow
August	17,029,267	40% Base flow
September	10,299,960	25% Base flow
October	0	0% Base flow
November	16,479,936	40% Base flow
December	29,801,217	70% Base flow

# Water Losses from Lake Tansi

- Evaporation
- Irrigation
- Leakage, transpiration, and other unknown losses

# Evaporation Losses

<u>Month</u>	<u>Open Water Evaporation (in)</u>	<u>Open Water Evaporation (gal)</u>
January	1.16	12,598,713
February	1.52	16,508,659
March	2.88	31,279,564
April	4.24	46,050,470
May	5.24	56,911,430
June	5.24	56,911,430
July	5.28	57,345,868
August	4.96	53,870,361
September	3.92	42,574,963
October	2.68	29,107,372
November	1.64	17,811,974
December	1.24	13,467,590
<u>Total</u>	<u>40</u>	<u>434,438,400</u>

# Irrigation Losses

<u>Month</u>	<u>Irrigation (gal)</u>
January	0
February	0
March	0
April	0
May	5,580,000
June	5,400,000
July	5,580,000
August	5,580,000
September	5,400,000
October	5,580,000
November	0
December	0
<u>Total</u>	<u>33,120,000</u>

# Available Water per Month per Day

