JEFFERSONTOWN WASTEWATER TREATMENT PLANT ODOR CONTROL PROJECT OVERVIEW

JEFFERSONTOWN ODOR CONTROL PROJECT SUMMARY

- Two Phase odor control project
- Total spent by MSD during 3 years is $600,000
- Last project successfully completed in October, 2003

Odor specialists with Webster Environmental Assoc. and CH2MHill initially conducted a study and developed a Master Odor Control Plan for the facility

CHEMICAL FEED SYSTEMS INSTALLED AT PUMP STATIONS

- Lakelet Way and Chenoweth Run Pump Stations were major contributors of odorous hydrogen sulfide
- Chemicals (Bioxide) help control odors from manholes outside plant boundaries as well

RAW SEWAGE CHANNELS AND SLUDGE HOLDING TANKS WERE COVERED TO CONTAIN ODORS

CARBON ADSORBER USED TO TREAT ODORS FROM SLUDGE HOLDING TANKS

- Carbon is often used to physcially remove odors from wastewater treatment plant processes
- This unit was tested and removes 99.8% of hydrogen sulfide and 94% of odor emissions

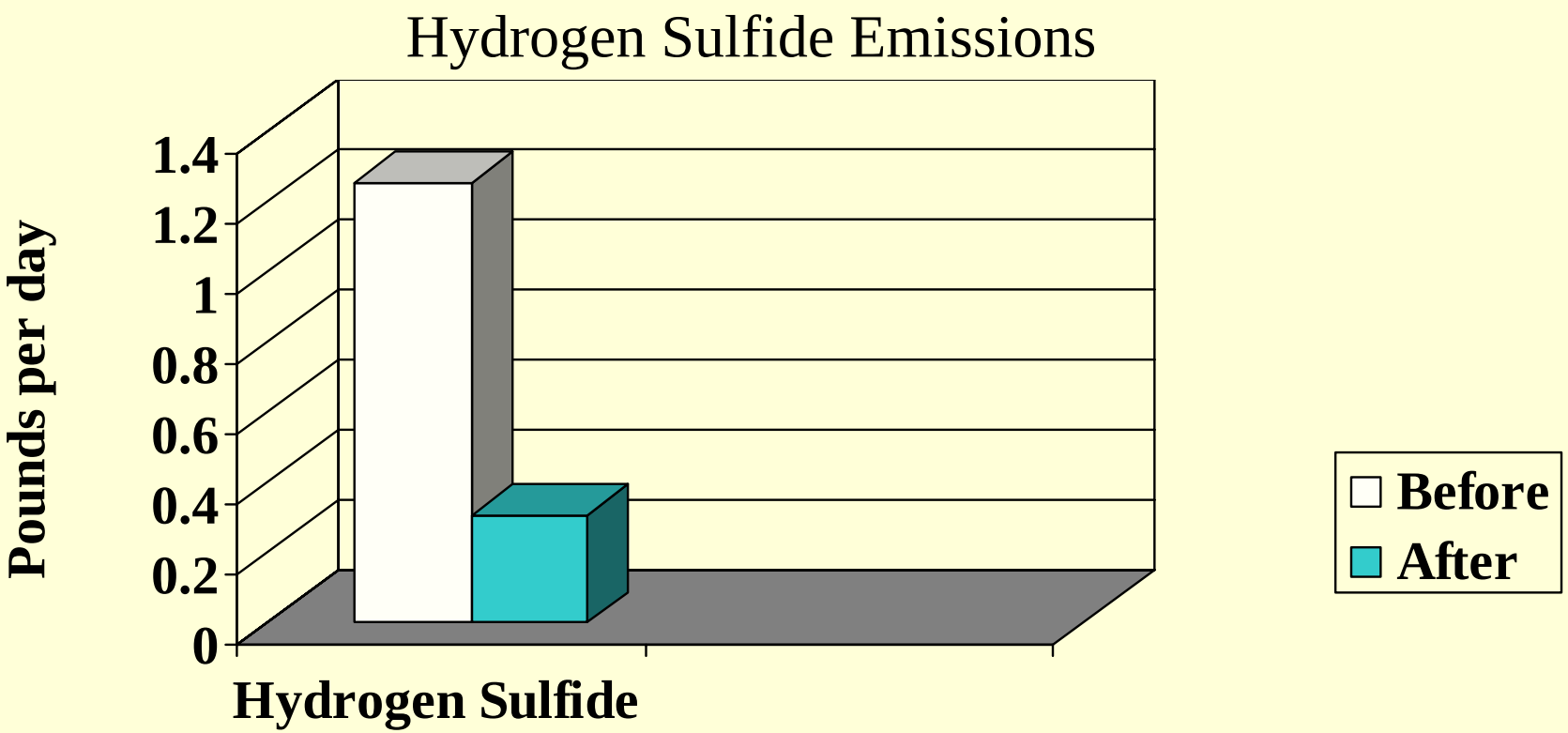
ACTIVATED SLUDGE DIFFUSION EFFECTIVELY TREATS RAW SEWAGE ODORS

- Air is pulled from under channel covers with an exhaust fan
- Odorous air is diffused into the activated sludge process for effective treatment with 97.6% removal of hydrogen sulfide

MSD MODIFIED IT'S OPERATION TO REDUCE ODOR EMISSIONS

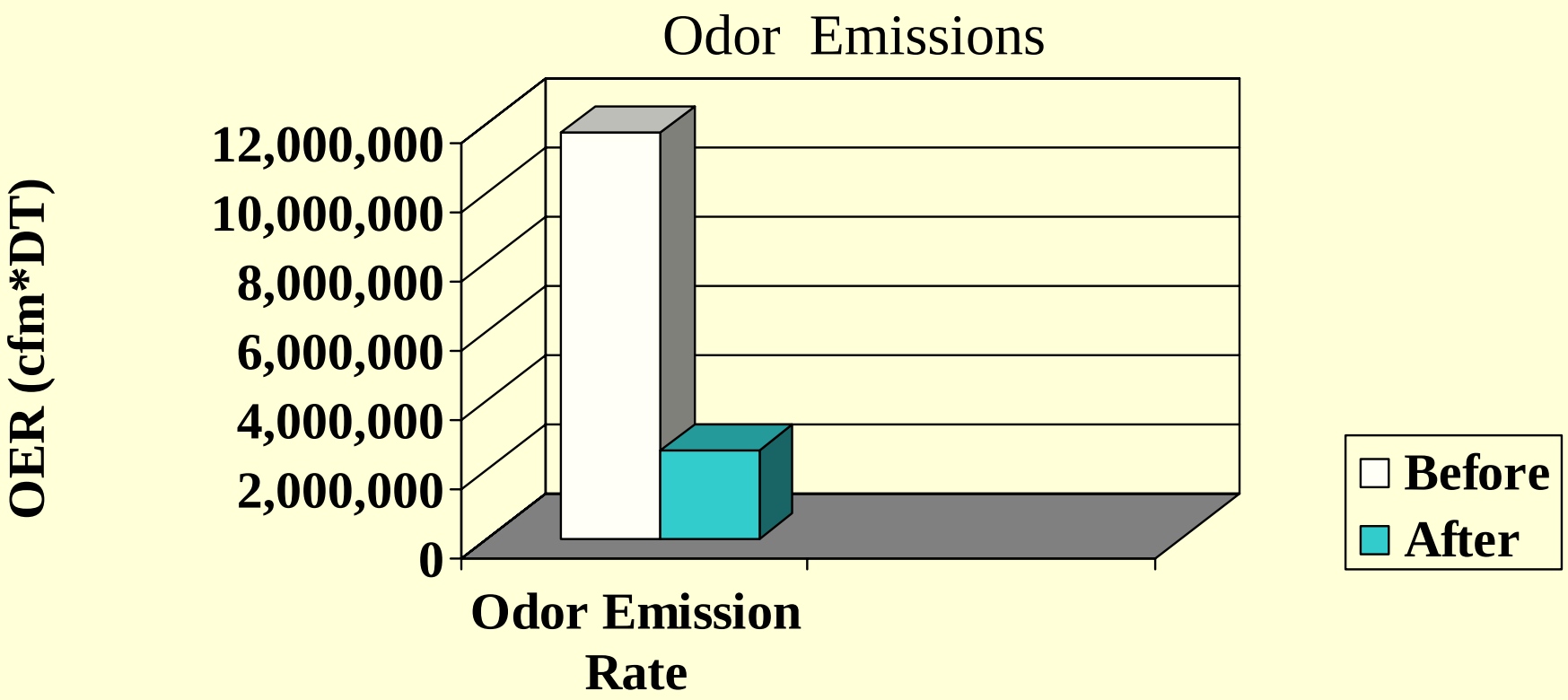
- MSD changed the operation of the plant process to reduce odor emissions from the secondary aeration basins
- Plant performance has not been compromised as a result

Jeffersontown WWTP



Hydrogen Sulfide Emissions are reduced by 76% as a result of odor control project

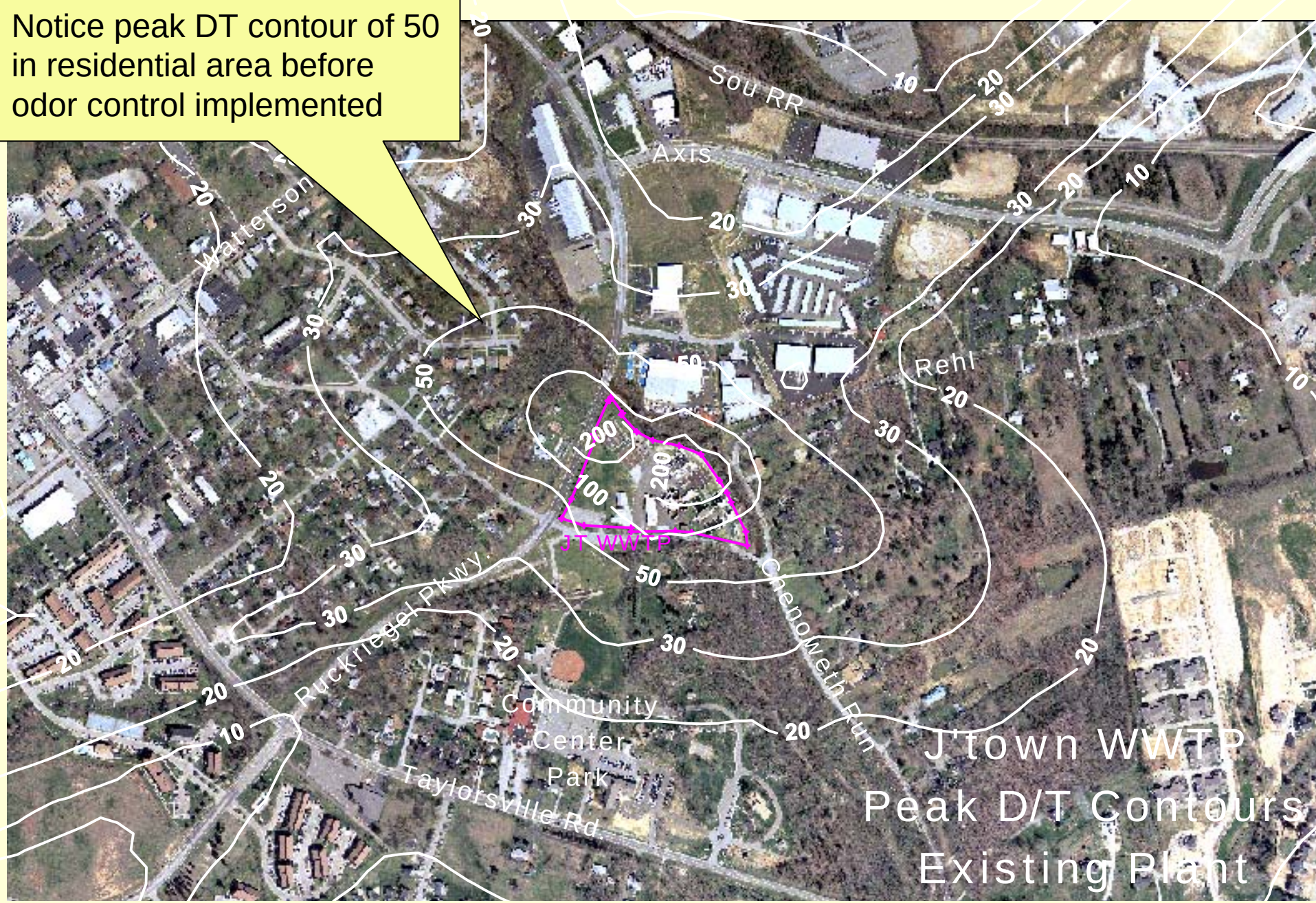
Jeffersontown WWTP

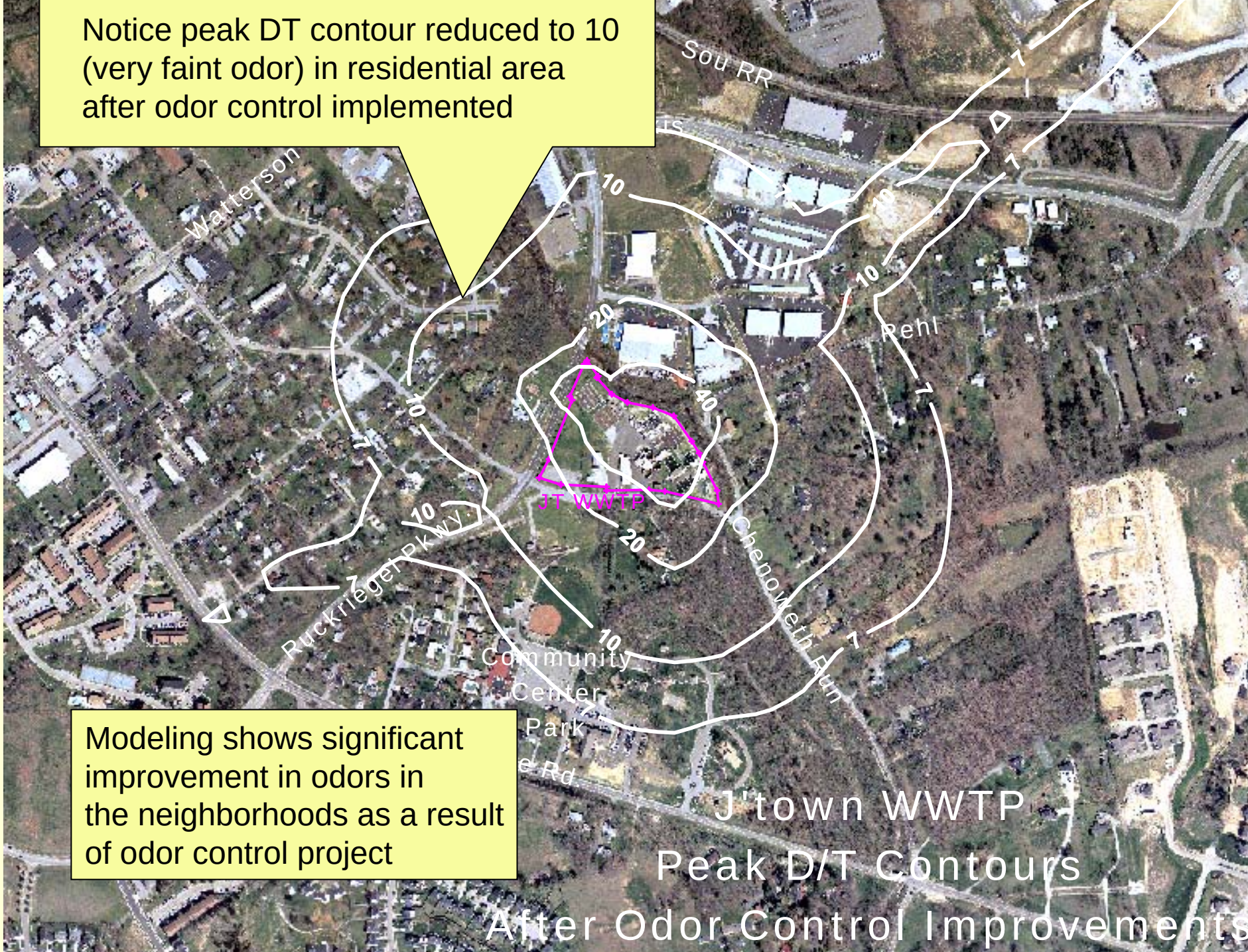


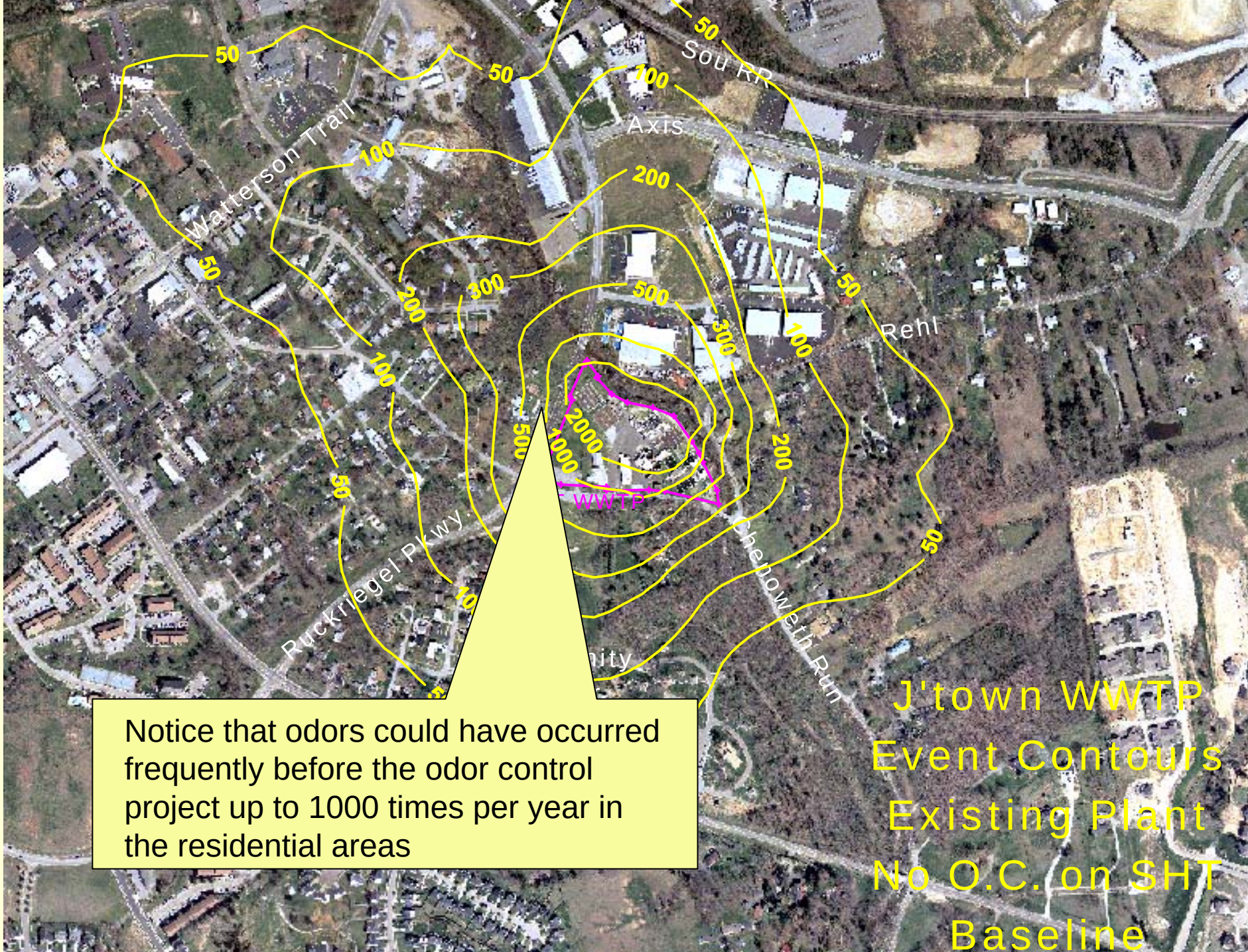
Odor emissions are reduced by 78% as as result of the odor control project

ODOR MODELING USED TO SHOW RESULTS……

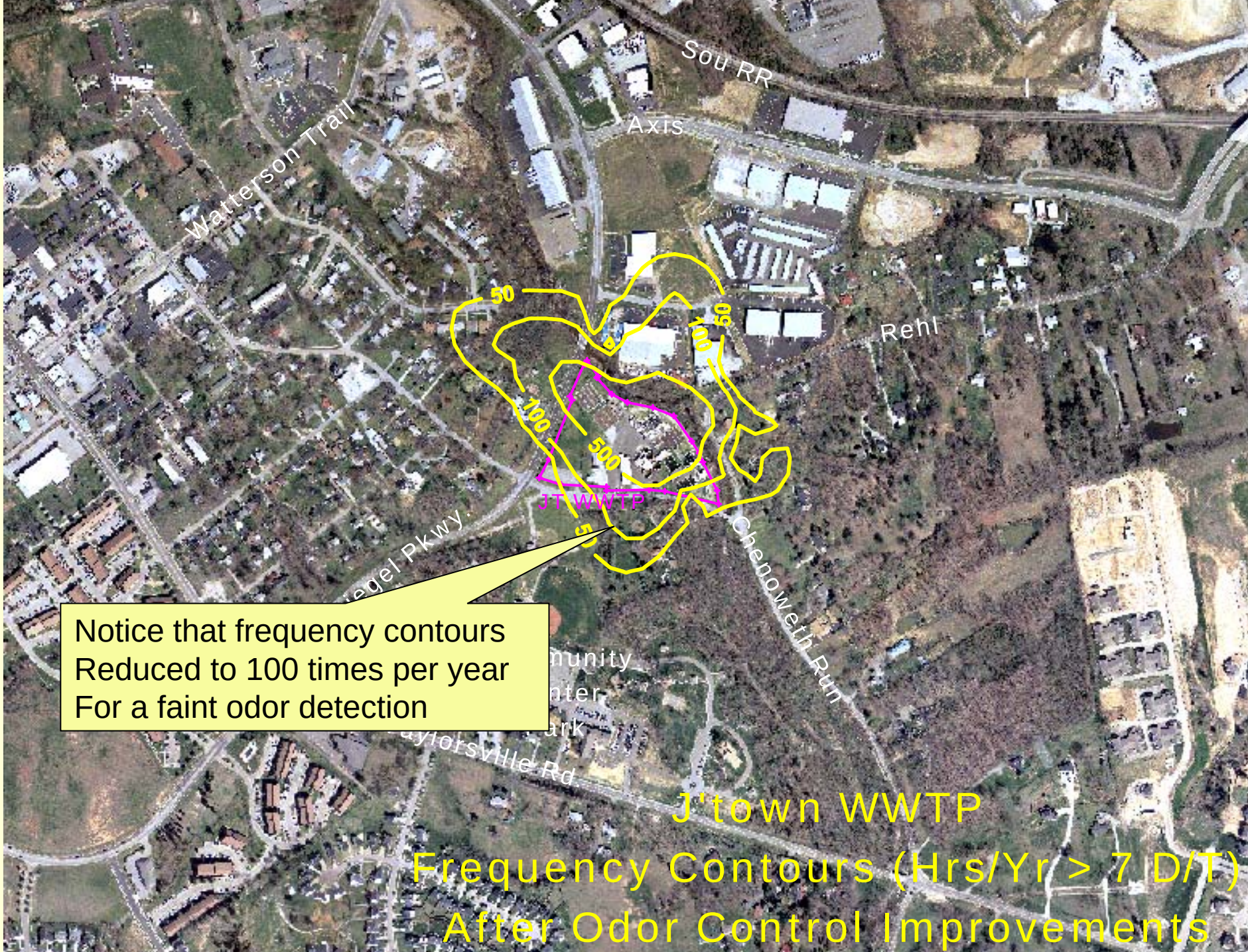
Models predict peak dilutions to threshold (DT) and the frequency (hours per year) with which they occur


Notice peak DT contour of 50 in residential area before odor control implemented
Sou RR
Axis
Watterson
Rehl
JT WWTP
Ruckriegel Pkwy.
Chenoweth Run
Community Center Park
Taylorsville Rd
J'town WWTP
Peak D/T Contours
Existing Plant


Notice peak DT contour reduced to 10 (very faint odor) in residential area after odor control implemented
Sou RR
Watterson
Rehl
JT WWTP
Ruckriegel Pkwy
Chenoweth Run
Community Center Park
Modeling shows significant improvement in odors in the neighborhoods as a result of odor control project
J'town WWTP
Peak D/T Contours
After Odor Control Improvements



Notice that odors could have occurred frequently before the odor control project up to 1000 times per year in the residential areas


Sou RR
Axis
Watterson Trail
Rehl
50
100
100
500
50
JTWWTP
Chenoweth Run
Notice that frequency contours
Reduced to 100 times per year
For a faint odor detection
J'town WWTP
Frequency Contours (Hrs/Yr > 7 D/T)
After Odor Control Improvements

MSD MEETS ODOR CONTROL GOALS FOR J'TOWN WWTP

- Successful odor control project has eliminated, or at the very least, significantly reduced odor complaints to comply with MSD's

Good Neighbor Policy