Fort Meade, MD
CBM - HSPF Model

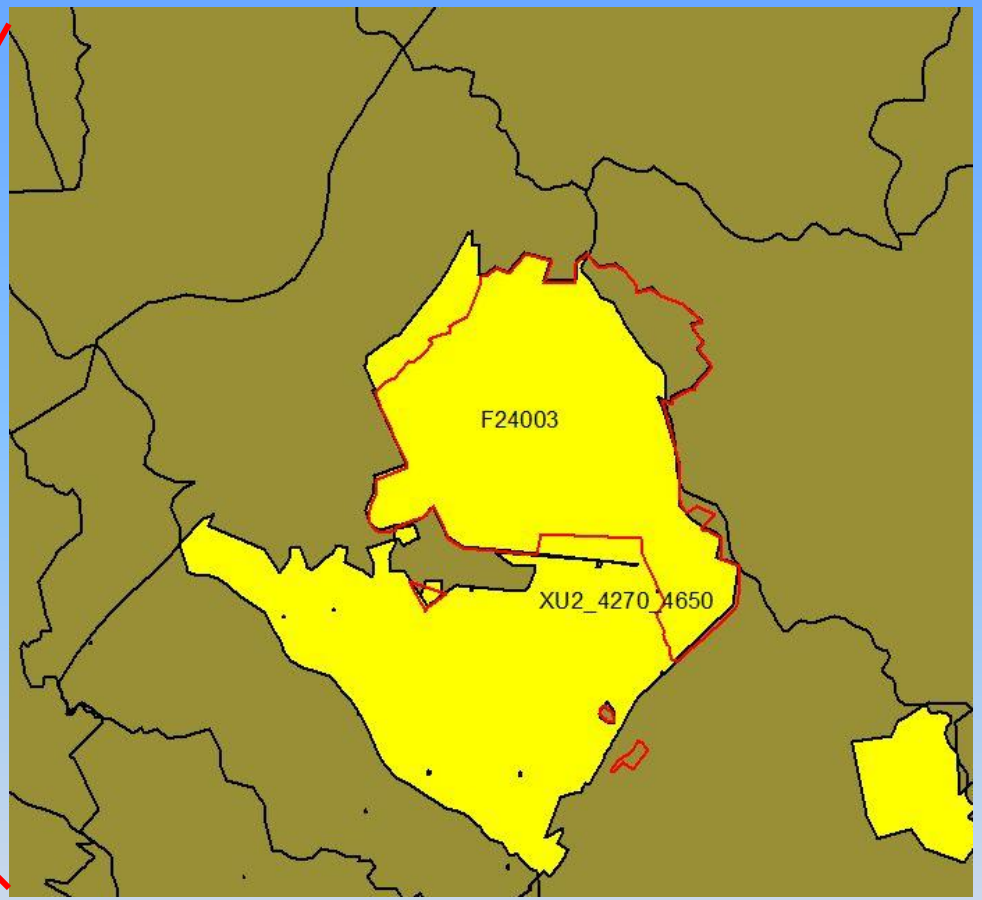
Comparison of Current CBM LULC with Revised LULC provided by Baltimore District, COE

Scenario Descriptions

Scenario 1 (S1) – Consisted of extracting the relevant land and river segments necessary to model the Fort Meade area. The current CBM land use areas and associated loadings were used in this run.

Scenario 2 (S2) – Consisted of modifying the extracted model (Fort Meade Model – S1) land use areas to match those provided in the ArcGIS land use shapefile provided by the Baltimore District. The CBM loadings for a specific land use type was not altered in this run.

Extracted CBM Land and River Segments



Land Segments	River Segments
A24003	XU2_4270_4650
A24027	XU0_4090_4270
F24003	XU0_4091_4270
F24027	

Only the land use areas in land segment F24003 had to be changed

CBM LULC

LULC ID	CBM Landuse Description
for	forest
hvf	harvested forest
hwm	hightill with manure
nhi	nutrient management hitil with manure
lwm	lowtill with manure
nlo	nutrient management lotil
hom	hightill without manure
nho	nutrient management hitil without manure
hyw	hay with nutrients
nhy	nutrient management hay
hyo	hay without nutrients
alf	alfalfa
nal	nutrient management alfalfa
pas	pasture
npa	nutrient management pasture
trp	degraded riparian pasture
urs	nursery
cfo	cafos
afo	non-cafo animal feeding operations
rpd	regulated pervious developed
rid	regulated impervious developed
rcn	regulated construction
rex	regulated extractive
npd	nonregulated pervious developed
nid	nonregulated impervious developed
nex	nonregulated extractive
cpd	combined pervious developed
cid	combined impervious developed
ccn	combined construction
cex	combined extractive
wat	Water

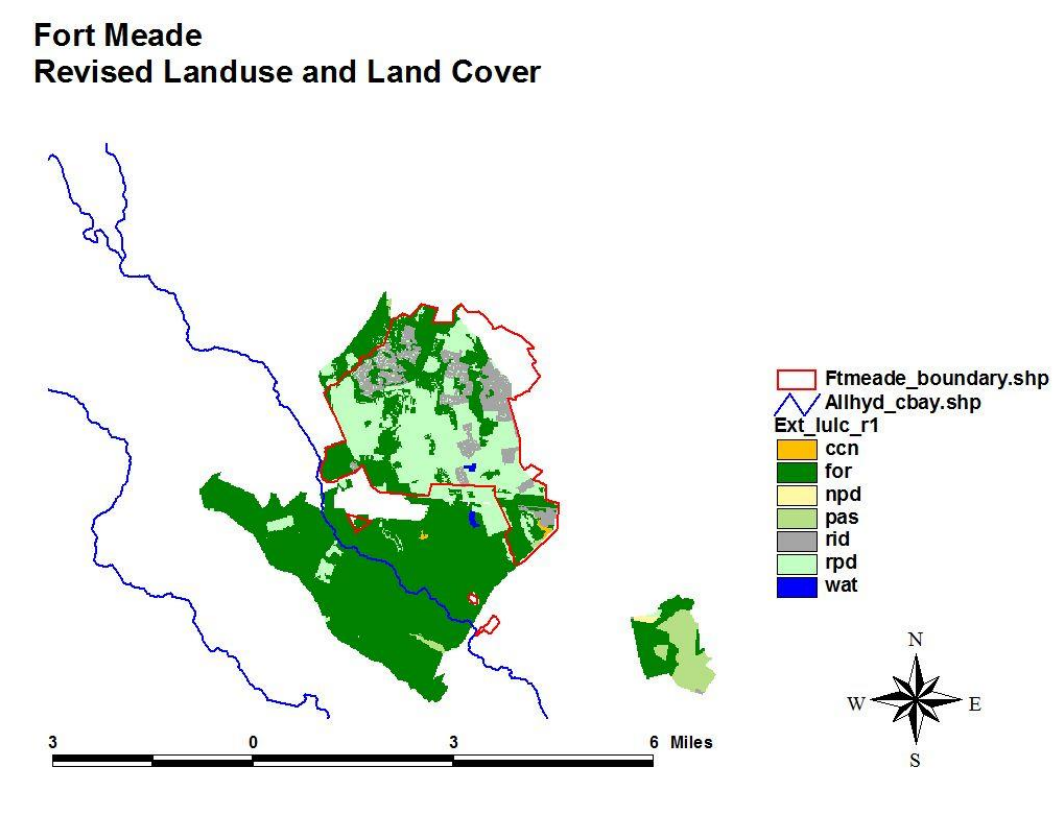
S1 and S2 land areas

LULC	S1 Area Acres	S2 Area Acres
afo	1.1	0.0
alf	0.9	0.0
atdep	22.5	22.5
ccn	0.0	18.2
for	5770.2	6701.5
hom	1.3	0.0
hvf	58.1	0.0
hwm	11.8	0.0
hyo	37.1	0.0
hyw	9.5	0.0
lwm	7.8	0.0
nal	10.4	0.0
nhi	133.3	0.0
nho	14.4	0.0
nhy	107.0	0.0
nid	0.7	753.5
nlo	87.7	0.0
npa	122.9	0.0
npd	1.5	19.6
pas	10.9	403.9
rid	1011.0	0.0
rpd	2903.6	2383.7
urs	2.4	0.0
Total	10326.2	10302.9

Developing S2 land use areas

LULC ID	USGS LULC Description	CBM LULC ID	CMB LULC Description
11	Residential	rpd	regulated pervious development
12	Commerical and Services	rid	regulated impervious developed
13	Industrial	rid	regulated impervious developed
14	Transportation, Communications, and Utilities	rid	regulated impervious developed
15	Industrial and Commerical Complexes	rid	regulated impervious developed
16	Mixed Urban or Built-Up Land	rpd	regulated pervious development
17	Other Urban or Built-Up Land	rpd	regulated pervious development
18	Assume Other Urban	rpd	regulated pervious development
21	Cropland and Pasture	pas	pasture
22	Orchards, Groves, etc.	for	forest
25	Assume Open Space	npd	nonregulated pervious developed
41	Deciduous Forest Land	for	Forest
42	Evergreen Forest Land	for	Forest
43	Mixed Forest Land	for	Forest
44	Assume Forest	for	Forest
50	Assume Water	wat	Water
60	Assume Wetland	wat	Water
73	Sandy Areas other than Beaches	ccn	combined construction

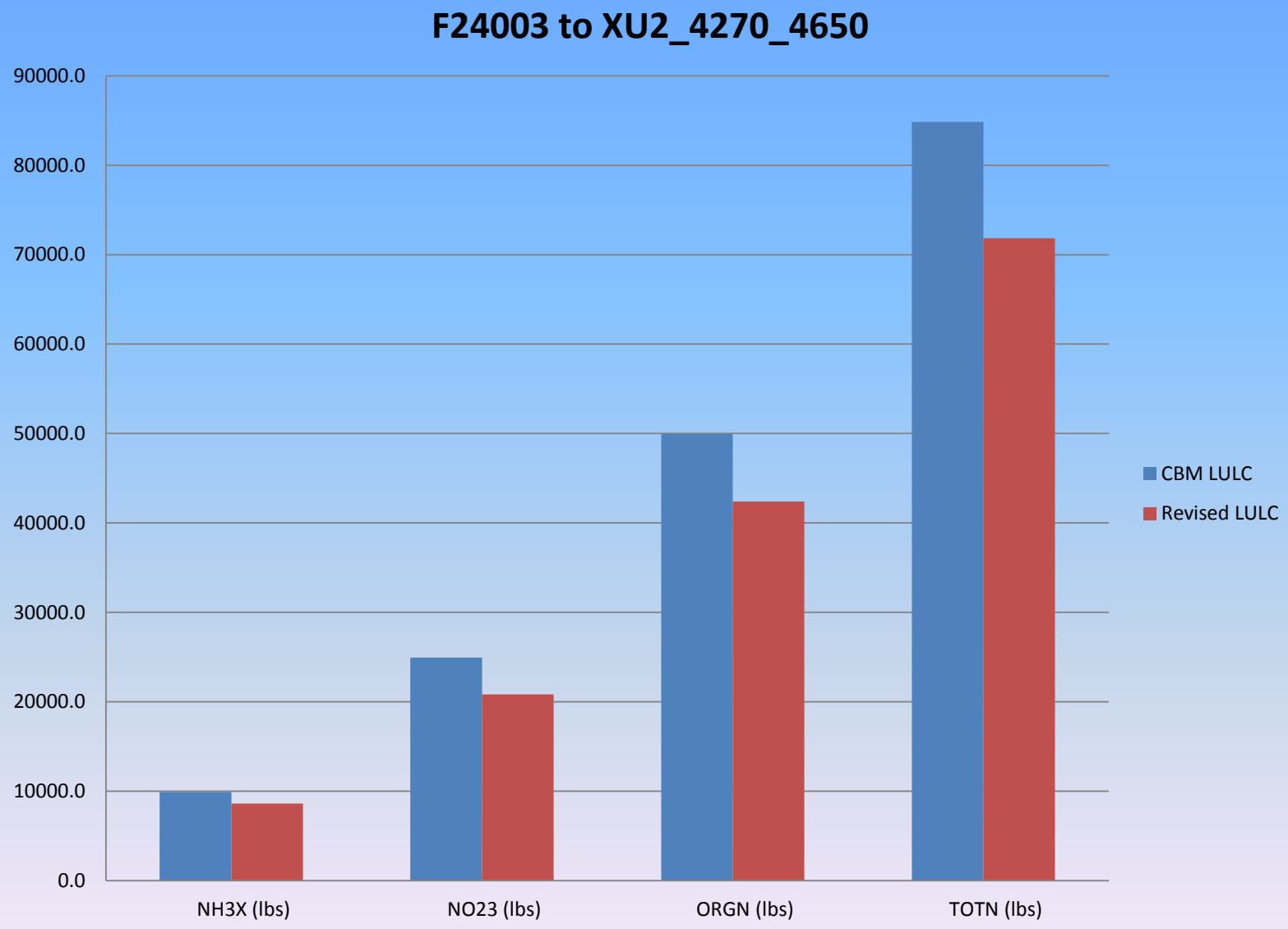
Developing S2 land use areas



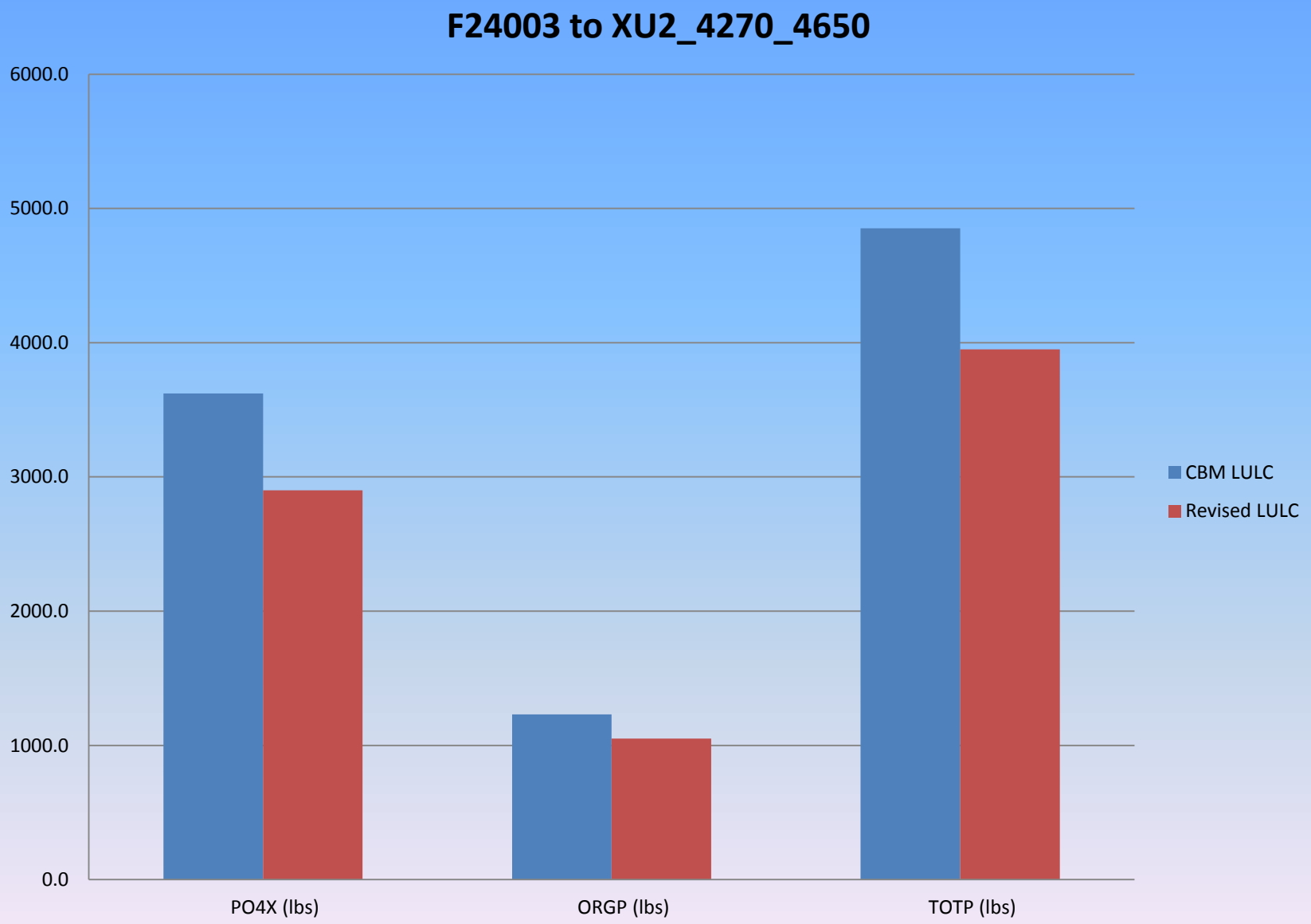
ID	Final Model LULC	Area (acres)
nid	nonregulated impervious developed	753.5
rpd	regulated pervious development	2383.7
pas	pasture	403.9
for	forest	6701.5
npd	nonregulated pervious developed	19.6
wat	Water	25.1
ccn	combined construction	18.2
Total		10305.6

Note: The CBM converts the wat acreage to atdep and there does not appear to be a 1:1 relationship hence the small difference in area between the GIS layer (10305.6) and what the model computes (10302.9).

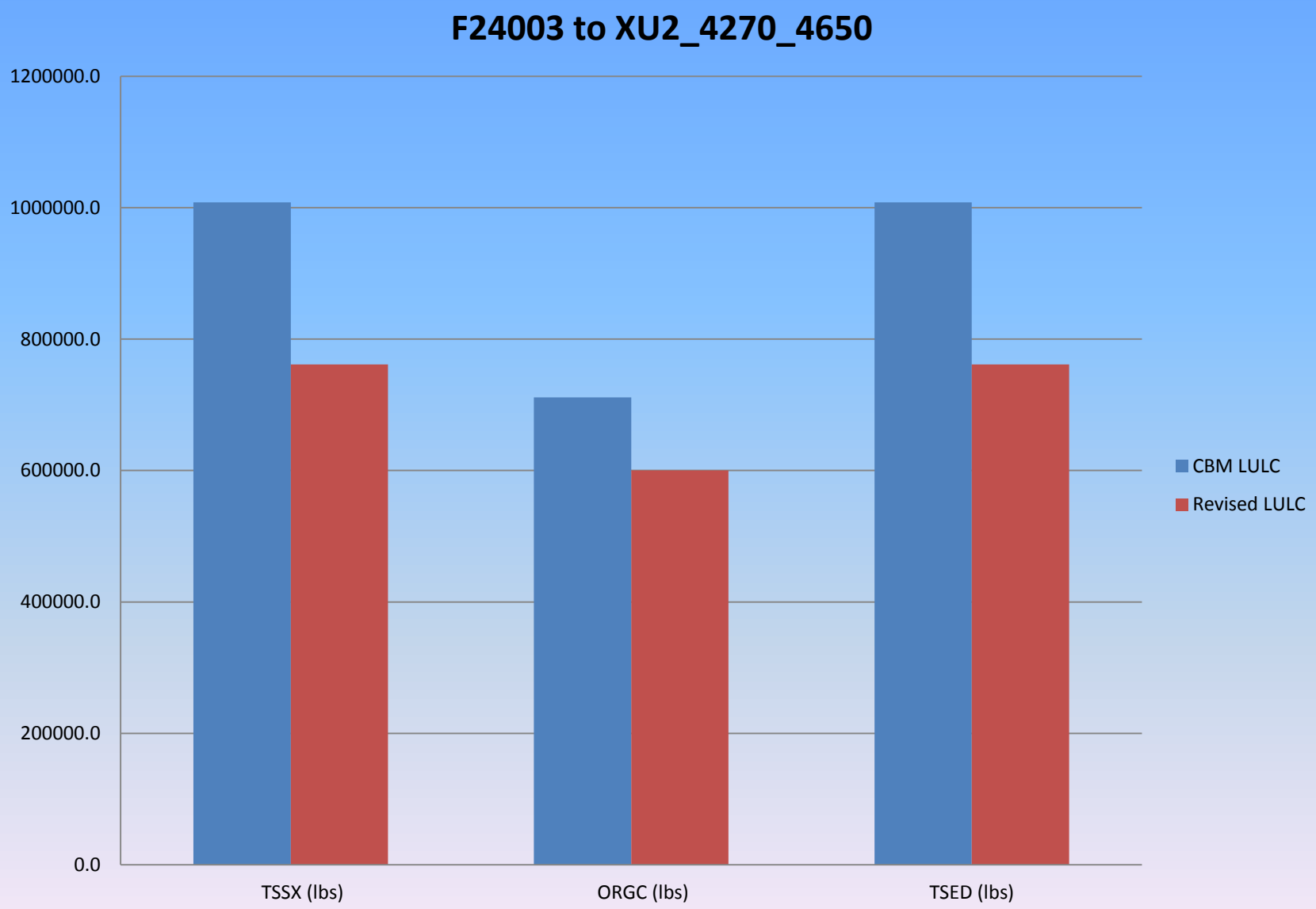
CBM Model Output



CBM Model Output



CBM Model Output

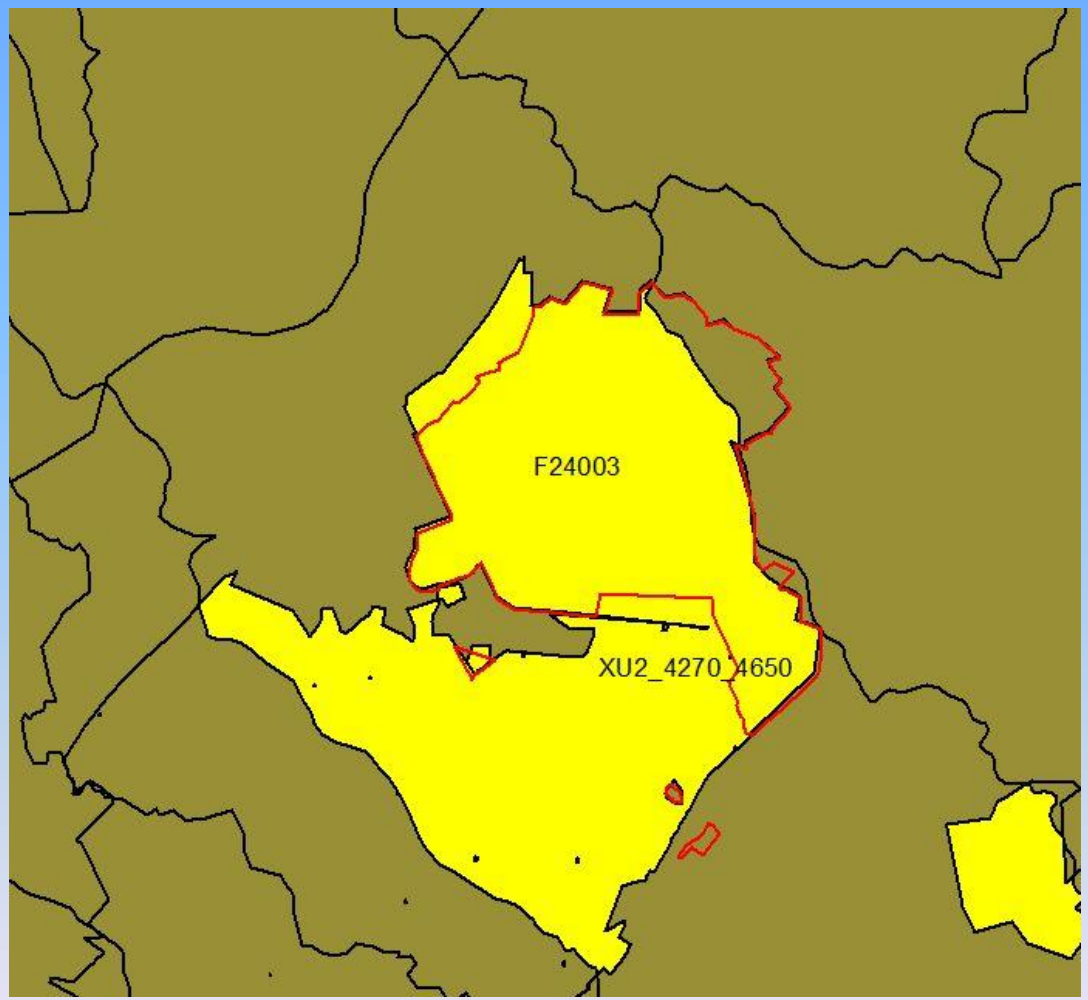


Potential Future CBM Refinements to support Army Installations

Federal land segments need to be revised to match installation boundaries

In this demonstration, F24003 does not exactly match the Fort Meade installation boundaries in addition to including areas outside of the installation boundary.

If we are going to manage the installation TMDLs then we need to be able to segregate them from the areas outside of the boundary.



Potential Future CBM Refinements to support Army Installations

If we are going to use the CBM to evaluate installation TMDLs and to implement BMPs then we need to coordinate the addition of installation specific landuse types and appropriate loadings.

If we adopt the spreadsheet approach for the installations then the CBM needs to zero out the areas within the installation boundary and use the results from the spreadsheet analysis as a point source into the CBM.