2. Statement of Needs

2.1. Methodology

The water resources of Carroll County were evaluated using a water balance approach to estimate existing and future water demands and availability, as documented in the Carroll County Water Demands and Availability Report (July 30, 2009). As part of this evaluation, the future water supply needs by locality and County-wide were calculated using the current water supply appropriations for each service area and the projected priority plus future service area average day demands.

2.2. Existing Water Supply Sources

Carroll County municipal water supply sources include groundwater wells, surface water sources and quarries. The locations of existing municipal water supply appropriation permits are shown on Figure 2-1.

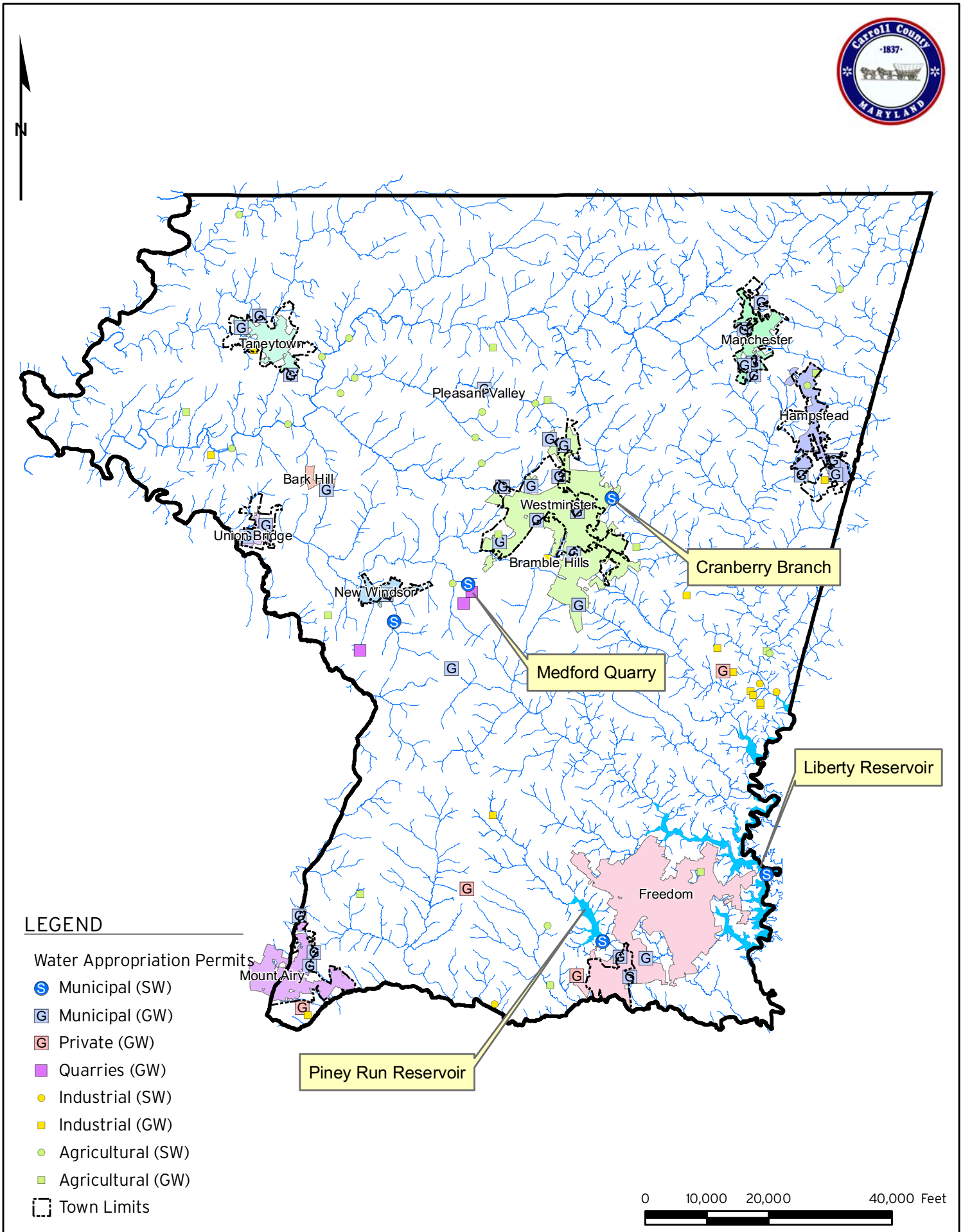
2.3. Local Water Needs by Water Service Area

An assessment of future water demands was included in the July 2009 Carroll County Water Demands and Availability[1]. Projected demands for buildout to the Future Service Area (FSA) boundaries for each of the service areas in the County were projected as part of the analyses associated with the report and were included in Appendix B of the report[1]. Probable additional future demands were calculated based on the difference between these projected demands for buildout to the FSA boundaries and the total current average day water appropriation for each water service area (Table 2-1). The total projected additional water requirement for the County and municipal water service areas is approximately 4.0 MGD.

2.4. Relationship Between Water Balance and Wastewater Limitations

An assessment of future wastewater limitations was included in the May 2009 Carroll County Wastewater Limitations report. Projected discharges for buildout to the Designated Growth Area (DGA) boundaries for each of the service areas in the County were projected as part of the analyses associated with the report. The total projected

additional wastewater treatment capacity beyond planned design capacities is 3.9 mgd on a net County-wide basis, or 4.7 mgd if Westminster's projected 0.8 mgd surplus capacity is ignored (Table 2-2).



MALCOLM PIRNIE	CARROLL COUNTY, MD ALTERNATIVES EVALUATION	Existing Water Appropriations Location Map	Aug 2009 Figure 2-1

Table 2-1:
Summary of Water Demand by Growth Area

MALCOLM PIRNIE

	DEMANDS					
	❶	❷	❸	❹	❺	❻
	Groundwater Only		EXISTING CONDITIONS		BUILDOUT	
Growth Area	Current Total Permitted Average Day Withdrawals [gpd]	Estimated 2007 Average Day Withdrawals [gpd]	Current Total Permitted Average Day Withdrawals [gpd]	Estimated 2007 Average Day Withdrawals [gpd]	Projected Priority + Future Service Area Average Day Demands [gpd]	Probable Maximum Additional Water Requirement [gpd]
Freedom	*438,000*	*129,210*	*4,638,000°*	*2,316,268*	*3,182,178*	*-1,456,000*
Hampstead	*580,000*	*459,649*	*580,000*	*459,649*	*1,107,988*	*528,000*
Manchester	*571,700*	*300,826*	*571,700*	*300,826*	*425,139*	*-147,000•*
Mount Airy ••	*895,000*	*757,000*	*895,000*	*757,000*	*1,258,770*	*364,000*
New Windsor	*196,000*	*104,181*	*196,100*	*104,181*	*394,356*	*198,000*
Taneytown	*583,000*	*508,819*	*583,000*	*508,819*	*1,746,686*	*1,164,000*
Union Bridge	*208,300*	*152,164*	*208,300*	*152,164*	*802,515*	*594,000*
Westminster	*1,976,000*	*1,350,418*	*4,115,000*	*3,218,703*	*4,394,904*	*1,176,000†*
Total WSAs	**5,213,000**	**3,762,267**	**11,787,100**	**7,817,610**	**13,312,535**	**4,024,000**

Notes:

❶ current groundwater appropriations for each WSA based on 2008 MDE data

❷ estimated 2007 groundwater usage from MDE data

❸ current total water appropriations for each WSA based on 2008 MDE data

❹ estimated 2007 total water usage from MDE data

❺ Projected priority + future service area demands average day demands based on Water Balance Assessment Tool Analysis of Current Plan

❻ Projected maximum groundwater requirement (if future demands were met by first using up existing appropriations and all subsequent appropriations were met using new appropriations) (❻=❺-❸) (rounded to the nearest 1,000 gpd)

• If Manchester's existing well capacities continue to produce less water than what is currently appropriated, Manchester could experience an infrastructure deficit of approximately 124,000 gpd under Buildout conditions (❺-❷=124,000 gpd)

•• Mount Airy permitted (❶) and estimated 2007 withdrawal (❷) values are based on personal communications [Dinne, 7/2/09]

† Assumed existing withdrawals in Westminster are equal to actual yield because existing wells are known to have significantly lower yields than the permitted amount (❻=❺-❹)

° Permitted withdrawals for Freedom include 4.2 mgd for Liberty reservoir, and 0.438 mgd for groundwater wells, but do not include the existing permit for Piney Run due to the absence of treatment facilities or the Springfield Hospital wells

Table 2-2:
Summary of Wastewater Capacity Needs by Growth Area

MALCOLM PIRNIE

Wastewater Service Area	WASTEWATER*							
	Reported 2008 Average Day Discharge	Existing + S1 Average Day Discharge	Priority + Future Average Day Discharge	DGA Buildout Average Day Discharge	Existing Design Capacity	Planned Design Capacity	Priority + Future Area Surplus	DGA Buildout Area Surplus
Freedom	2,080,000	2,654,123	3,731,253	5,394,643	3,500,000	3,500,000	-231,253	-1,894,643
Hampstead	580,000	666,856	925,867	1,552,837	900,000	900,000	-25,867	-652,837
Manchester	430,000	373,039	467,289	837,809	500,000	500,000	32,711	-337,809
Mount Airy	667,000	1,007,730	1,397,900	1,398,900	1,200,000	1,200,000	-197,900	-198,900
New Windsor	60,000	69,666	301,666	305,466	94,000	115,000	-186,666	-190,466
Taneytown	830,000	922,253	1,743,703	1,744,453	1,100,000	1,100,000	-643,703	-644,453
Union Bridge	140,000	279,867	889,507	927,997	200,000	200,000	-689,507	-727,997
Westminster	4,440,000	4,827,295	5,032,065	5,705,905	5,000,000	6,500,000	1,467,935	794,095
Total Service Areas	**9,227,000**	**10,800,829**	**14,489,250**	**17,868,010**	**12,494,000**	**14,015,000**	**-474,250**	**-3,853,010**

Notes

- all numbers in gallons per day

* estimates based on results of May 2009 Carroll County Wastewater Limitations report