

Howell, Beth (MRC)

From: Eversole, Mark (MRC)
Sent: Monday, December 08, 2014 10:31 AM
To: Howell, Beth (MRC)
Subject: FW: JRWA - Responses to 11/10/14 DEQ Email
Attachments: DEQ Response - Sarah Marsala 20141205 comined.pdf

14-0343

From: Joe Hines [<mailto:Joe.Hines@timmons.com>]
Sent: Friday, December 05, 2014 7:27 PM
To: Marsala, Sarah (DEQ)
Cc: Kudlas, Scott (DEQ); bbd304@comcast.net; Steve Nichols (snichols@fluvannacounty.org); David Saunders; Christian Goodwin (cgoodwin@louisiana.gov); Steven.A.Vanderploeg@usace.army.mil; Eversole, Mark (MRC)
Subject: JRWA - Responses to 11/10/14 DEQ Email

Sarah,

Please find attached our responses to your 11/10/14 email request for additional information. We would like to arrange a conference call early next week to walk you through the letter and revised demand summary.

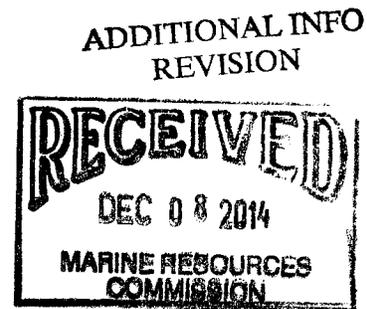
The file is a large file (9 MB) so if you need us to forward a hard copy, please let us know.

Thanks and hope you have a great weekend!

Joe

Joseph C. Hines, PE, MBA
Principal

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Your Vision Achieved Through Ours





December 5, 2014

RECEIVED

By Virginia Marine Resources Commission at 10:34 am, Dec 08, 2014

Ms. Sarah K. Marsala
Surface Water Withdrawal Project Manager
Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

Add'l Info/Revisions

**Re: Joint Permit Application Number 14-0343 – Responses to email dated 11/10/14
James River Water Supply Project, James River Water Authority**

Dear Ms. Marsala,

Thank you for your time recently to discuss this permit and your questions regarding the permit. Please find enclosed our responses to your email dated 11/10/2014.

1. *The submittal indicates that temporary impacts to surface waters may occur that are associated with installation of the water line. Based upon staff review of the information submitted thus far, specifically the wetland delineation map and the proposed water line route, surface waters appear to be impacted by the water line located between the intake structure and the Rivanna River crossing. All proposed impacts to surface waters, even temporary impacts, located within the limits of the proposed project must be identified for review by DEQ. Provide the following information to enable our review:*
 - a. *Type of surface water to be impacted.*
 - b. *Amount of impact in acreage and if a stream channel, in linear feet.*
 - c. *Plan view of the proposed impact area that identifies, at minimum, the following:*
 - i. *Jurisdictional boundaries of the surface water and the extent of the proposed impact area.*
 - ii. *Proposed and existing contours*
 - iii. *Proposed and existing structures*

Response: Attached to this letter is the "Site Plan of JRWA Raw Water Pump Station, Intake and Force Main" indicating the proposed impacts.

2. *Information was provided regarding the selection of the 2030 water demands for each County's economic development prospects in the table entitled "Summary of County Approved Water Supply Plans with Project Demands." However, discussion regarding the selection for the 2045 demands were not provided, please provide.*

Response:

As noted in our September 12, 2014 letter, we have made reasonable assessments for potential water demands for economic development prospects. Following is a table identifying the potential breakdown and water demand scenarios for Economic Development users for the permit period (15-yrs) and planning period (30-yrs).

Louisa County:

Year 2030 (permit period – 15 years)

Potential Scenarios	Total Flow
2 prospects at 200,000 gpd OR	400,000 gpd
1 prospect at 150,000 gpd and 1 prospect at 250,000 gpd	400,000 gpd

Year 2045 (planning period – 30 years)

Potential Scenarios	Total Flow
2 additional prospects at 175,000 gpd OR	750,000 gpd (add 350,000 gpd)
1 additional prospect at 150,000 gpd and 1 additional prospect at 200,000 gpd	750,000 gpd (add 350,000 gpd)

Fluvanna County:

Year 2030 (permit period – 15 years)

Potential Scenarios	Total Flow
1 prospect at 300,000 gpd OR	300,000 gpd
2 prospects at 150,000 gpd	300,000 gpd

Year 2045 (planning period – 30 years)

Potential Scenarios	Total Flow
1 additional prospect at 225,000 gpd OR	525,000 gpd (add 225,000 gpd)
1 additional prospect at 150,000 gpd and 1 additional prospect at 75,000 gpd	525,000 gpd (add 225,000 gpd)

3. *Based staff's review of the proposed peak day factor and the revised "Summary of County Approved Water Supply Plans with Project Demands," we have the following questions:*
- a. *Clarify the peak day factor proposed. In the September 12, 2014 submittal, a factor of 1.87 was requested. However, in the October 30, 2014 submittal, a peak day factor of 1.85 is proposed.*
 - b. *Multiple peak day factors appear to be used in the revised "Summary of County Approved Water Supply Plans with Project Demands" table. The ratio between the average day and peak day values vary as follows: 1.85 for "Total Demand" value, 1.67 for service areas and economic development prospect values and 1.99 for "Adjusted Allocation Request for Louisa" value. Discuss the differences mentioned above.*
 - c. *It appears that Note 4 needs to be updated in regards to the maximum day volume of water requested.*

Response: The revised "Summary of County Approve Water Supply Plans with Project Demands" is attached with revisions as follows:

1. The summary accounts for a 1.6 Average to Peak flow factor for all demands.
 2. Additional notations have been provided to explain the increase in the peak factor above 1.6 due to the adjusted allocation request that takes into consideration the existing treatment capacity and water supply allocation at the Northeast Creek Water Treatment Plant in Louisa County.
 3. As a result of these adjustments for Northeast Creek WTP, the resulting Combined Average to Peak Factor for the 15 Year Permit Period is 1.76 instead of 1.6.
 4. The resulting Average to Peak Daily Factor accounting for a 6 day per week operation cycle is 2.05.
 5. Note number 4 has been revised.
4. *Based upon the information provided, approximately 40% of the withdrawal will be returned to the James River watershed. Is the location of the return flow known? If so, provide the approximate locations of any return flows.*

Response: Attached to this letter is an exhibit "JRWA Overall Map –Indicating Demand Centers and Return Flows to James River". These points are based on the assumption that existing treatment plants in the vicinity of the proposed water demands will be upgraded to receive and treat wastewater in an amount proportional to the proposed demands.

Generally speaking, approximately 44% of the demand for the permit period (2030) and approximately 42% of the demand for the planning period (2045) will be returned to the James River via the Rivanna River, North Creek and the James River, either upstream of the intake, or within several hundred yards downstream of the intake.

We hope this adequately addresses your concerns outlined in your email. We would like to schedule a conference call early next week to discuss the revised demand table.

Thank you for your assistance in this matter and please contact us with any questions you may have.

Respectfully submitted,

Timmons Group



David J. Saunders, PE
Principal



Joseph C. Hines, PE, MBA
Principal

Attachments:

1. Summary of County Approved Water Supply Plans w/ Revised Projected Demands; revised 12/05/2014
2. Site Plan of JRWA Raw Water Pump Station, Intake and Force Main
3. JRWA Overall Map –Indicating Demand Centers and Return Flows to James River

cc: Mr. Goodman B. Duke, Chairman of James River Water Authority
Mr. Steven M. Nichols, Fluvanna County Administrator
Mr. Christian Goodwin, Louisa County Administrator

James River Water Authority

Relocation of Intake for VWP Individual Permit Number 04-0805
3/5/2014 (Revised 12/05/14)

Summary of County Approved Water Supply Plans w/ Projected Demands

	Unadjusted Demand Summary (9) Without Northeast Creek WTP						Adjusted Demand Summary (9) With Northeast Creek WTP						Unadjusted Demand Summary (9) Without Northeast Creek WTP						Adjusted Demand Summary (9) With Northeast Creek WTP					
	2020		2030		2030		2040		2045		2045		2050		2045		2045		2050		2050			
	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak		
Louisa County WSP (1)																								
Gum Spring	58,391	93,426	118,409	189,454	118,409	189,454	161,798	258,877	185,455	296,727	185,455	296,727	209,111	334,578	185,455	296,727	185,455	296,727	209,111	334,578	209,111	334,578		
Ferncliff	76,322	122,115	154,773	247,637	154,773	247,637	211,910	339,056	242,844	388,550	242,844	388,550	273,778	438,045	242,844	388,550	242,844	388,550	273,778	438,045	273,778	438,045		
Shannon Hill	37,931	60,690	77,500	124,000	77,500	124,000	106,517	170,427	122,037	195,258	122,037	195,258	137,556	220,090	122,037	195,258	122,037	195,258	137,556	220,090	137,556	220,090		
Zion Crossroads	460,460	736,736	712,045	1,139,272	712,045	1,139,272	890,562	1,424,899	989,837	1,583,738	989,837	1,583,738	1,089,111	1,742,578	989,837	1,583,738	989,837	1,583,738	1,089,111	1,742,578	1,089,111	1,742,578		
Economic Development Prospects (9)	250,000	400,000	400,000	640,000	400,000	640,000	600,000	960,000	750,000	1,200,000	750,000	1,200,000	900,000	1,440,000	750,000	1,200,000	750,000	1,200,000	900,000	1,440,000	900,000	1,440,000		
Route 250 / I 64 Service Areas	883,104	1,412,966	1,462,727	2,340,363	1,462,727	2,340,363	1,970,787	3,153,259	2,290,172	3,664,274	2,290,172	3,664,274	2,609,556	4,175,290	2,290,172	3,664,274	2,290,172	3,664,274	2,609,556	4,175,290	2,609,556	4,175,290		
LCWA	73,859	118,174	73,020	116,832	73,020	116,832	72,199	115,518	71,798	114,877	71,798	114,877	71,397	114,235	71,798	114,877	71,798	114,877	71,397	114,235	71,397	114,235		
Town of Louisa	266,090	425,744	392,736	628,378	392,736	628,378	482,092	771,347	532,043	851,268	532,043	851,268	581,993	931,189	532,043	851,268	532,043	851,268	581,993	931,189	581,993	931,189		
Town of Mineral	107,343	171,749	148,317	237,307	148,317	237,307	196,831	314,930	223,338	357,341	223,338	357,341	249,845	399,752	223,338	357,341	223,338	357,341	249,845	399,752	249,845	399,752		
Lake Anna	496,858	794,973	1,009,242	1,614,787	1,009,242	1,614,787	1,380,674	2,209,078	1,582,930	2,532,687	1,582,930	2,532,687	1,785,185	2,856,296	1,582,930	2,532,687	1,582,930	2,532,687	1,785,185	2,856,296	1,785,185	2,856,296		
North East Creek WTP Service Area (3)	944,150	1,510,640	1,623,315	2,597,304	1,623,315	2,597,304	2,131,796	3,410,874	2,410,108	3,856,173	2,410,108	3,856,173	2,688,420	4,301,472	2,410,108	3,856,173	2,410,108	3,856,173	2,688,420	4,301,472	2,688,420	4,301,472		
James River Supply (Louisa)	1,827,254	2,923,606	3,086,042	4,937,667	3,086,042	4,937,667	4,102,583	6,564,133	4,700,280	7,520,447	4,700,280	7,520,447	5,297,976	8,476,762	4,700,280	7,520,447	4,700,280	7,520,447	5,297,976	8,476,762	5,297,976	8,476,762		
Peak Factor - Louisa		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		
Deduct for North East Creek WTP Capacity (3)	1,000,000	1,000,000	No Adjustment Made	-	1,000,000	1,000,000	1,000,000	1,000,000	No Adjustment Made	-	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000		
Adjusted Allocation Request for Louisa	827,254	1,923,606	3,086,042	4,937,667	2,086,042	3,937,667	3,102,583	5,564,133	4,700,280	7,520,447	3,700,280	6,520,447	4,297,976	7,476,762	3,700,280	6,520,447	3,700,280	6,520,447	4,297,976	7,476,762	4,297,976	7,476,762		
Adjusted Peak Factor - Louisa (7)		2.33		1.60		1.89		1.79		1.60		1.76		1.74		1.60		1.76		1.74		1.74		
Fluvanna County WSP (2)																								
Columbia CWS	4,315	6,904	5,158	8,253	5,158	8,253	6,473	10,357	7,768	12,428	7,768	12,428	9,062	14,499	7,768	12,428	7,768	12,428	9,062	14,499	9,062	14,499		
Fork Union CWS	196,116	313,786	226,020	361,632	226,020	361,632	282,525	452,040	339,030	542,448	339,030	542,448	395,535	632,856	339,030	542,448	339,030	542,448	395,535	632,856	395,535	632,856		
Palmyra CWS	25,720	41,152	70,730	113,168	70,730	113,168	102,558	164,093	125,634	201,014	125,634	201,014	148,709	237,934	125,634	201,014	125,634	201,014	148,709	237,934	148,709	237,934		
Proposed Fluvanna CWS	324,315	518,904	1,070,541	1,712,866	1,070,541	1,712,866	1,403,336	2,245,338	1,724,245	2,758,791	1,724,245	2,758,791	2,045,153	3,272,245	1,724,245	2,758,791	1,724,245	2,758,791	2,045,153	3,272,245	2,045,153	3,272,245		
Economic Development Prospects (6)	150,000	240,000	300,000	480,000	300,000	480,000	450,000	720,000	525,000	840,000	525,000	840,000	600,000	960,000	525,000	840,000	525,000	840,000	600,000	960,000	600,000	960,000		
James River Supply (Fluvanna)	700,466	1,120,746	1,672,449	2,675,918	1,672,449	2,675,918	2,244,892	3,591,827	2,721,676	4,354,681	2,721,676	4,354,681	3,198,459	5,117,534	2,721,676	4,354,681	2,721,676	4,354,681	3,198,459	5,117,534	3,198,459	5,117,534		
Peak Factor - Fluvanna		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		1.60		

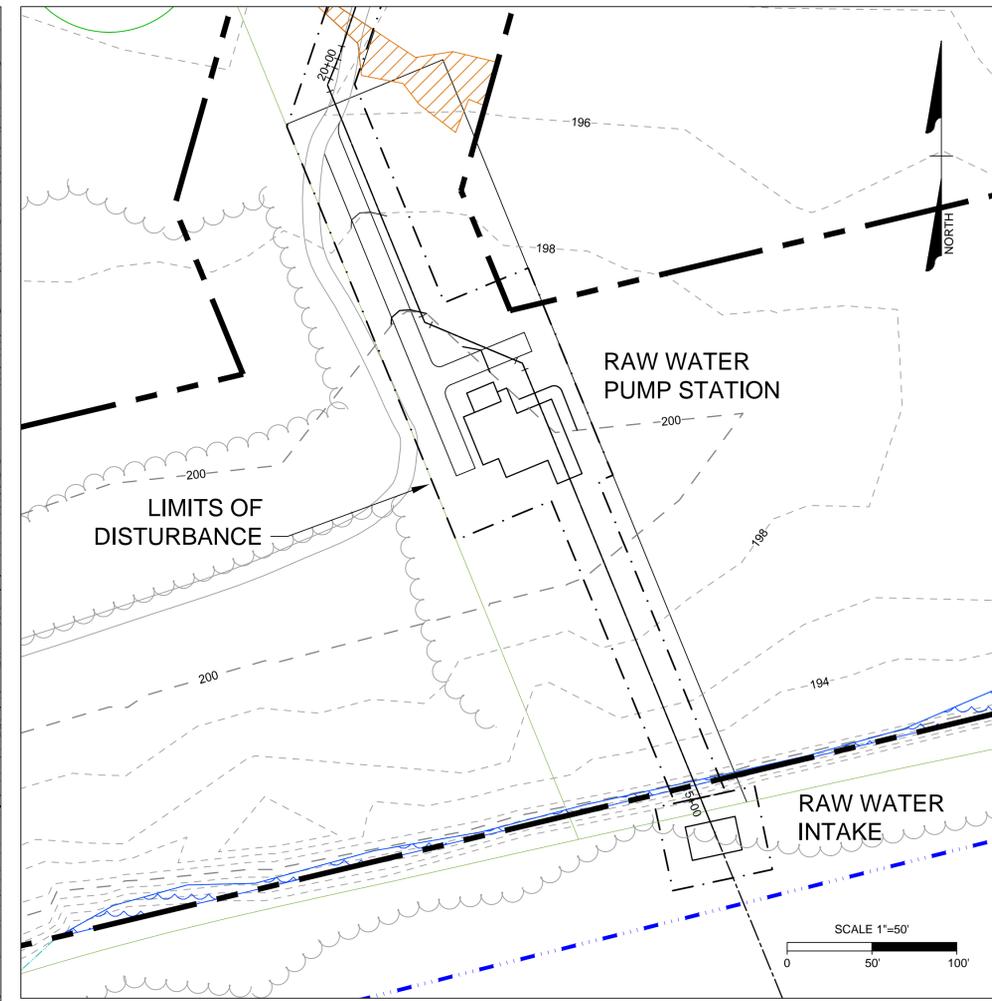
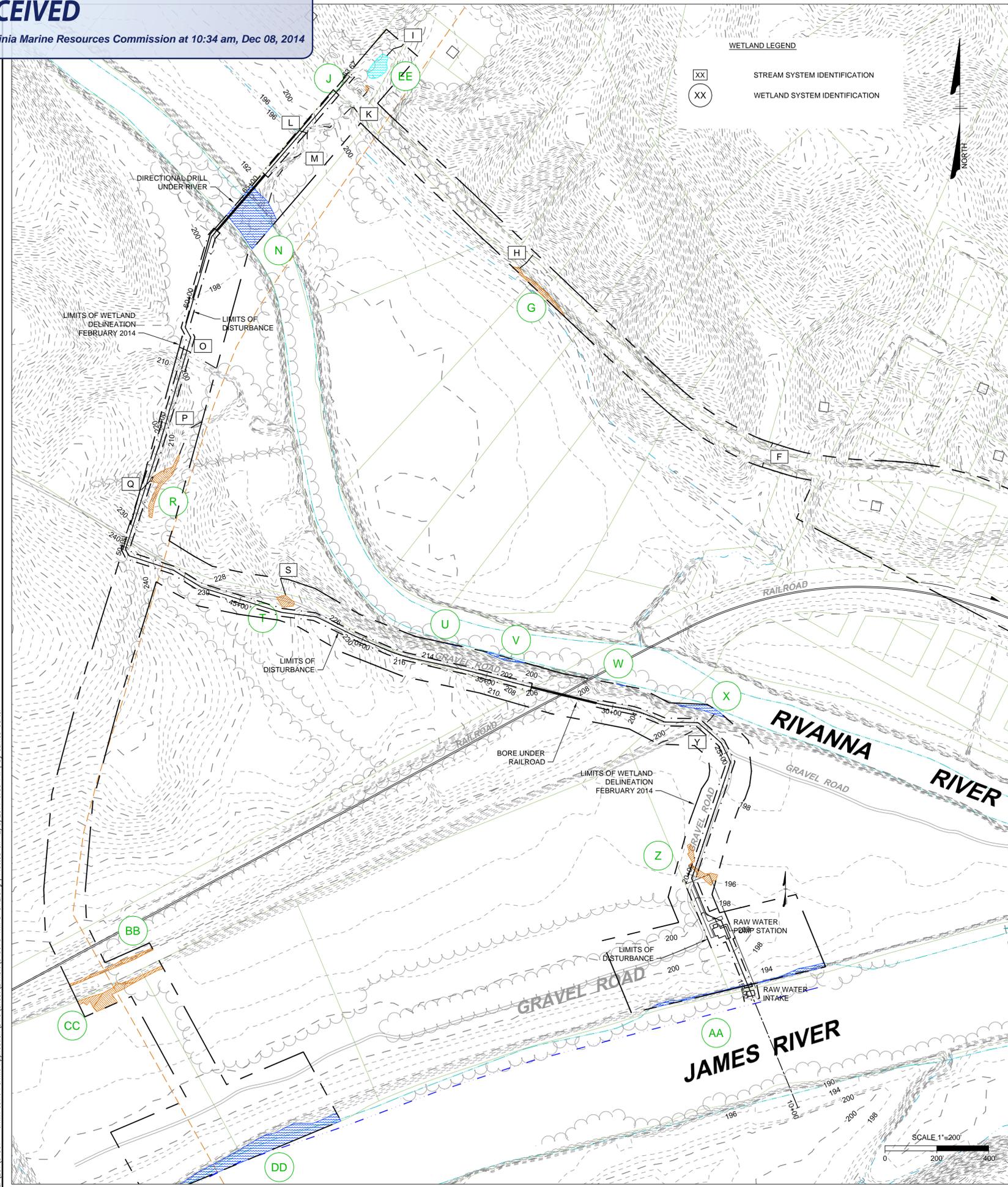
Combined Projected Demands	2020		2030		2030		2040		2045		2045		2050	
	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak	Avg	Peak
	15 Year Permit Period		15 Year Permit Period		15 Year Permit Period		15 Year Permit Period		30 Year Planning Period		30 Year Planning Period		30 Year Planning Period	
James River Water Supply (4)	1,527,720	3,044,352	4,758,491	7,613,586	3,758,491	6,613,586	5,347,475	9,155,960	7,421,955	11,875,128	6,421,955	10,875,128	7,496,435	12,594,296
Adjustment for Treatment Residuals 7.5% (5)	114,579	228,326	356,887	571,019	281,887	496,019	401,061	686,697	556,647	890,635	481,647	815,635	562,233	944,572
Total Demand	1,642,299	3,272,678	5,115,378	8,184,605	4,040,378	7,109,605	5,748,536	9,842,657	7,978,602	12,765,763	6,903,602	11,690,763	8,058,668	13,538,868
Combined Peak Month Daily Factor (8)		1.99	(9) 1.60	(9) 1.76				1.71	(9) 1.60	(9) 1.69			1.68	
Max Daily Demand; 6 day per week operation			(9) 9,548,705	(9) 8,294,539					(9) 14,893,390	(9) 13,639,223				
Max Daily Peak Factor			(9) 1.87	(9) 2.05					(9) 1.87	(9) 1.98				
(7) Current Permit Withdrawal Rate (2021)	2,850,000	5,700,000	2,850,000	5,700,000	2,850,000	5,700,000								
Louisa Portion %	54%	63%	65%	65%	56%	60%	58%	61%	63%	63%	58%	60%	57%	59%
Louisa Portion GPD	889,298	2,067,877	3,317,495	5,307,992	2,242,495	4,232,992	3,335,277	5,981,443	5,052,800	8,084,481	3,977,800	7,009,481	4,620,324	8,037,519
Fluvanna Portion %	46%	37%	35%	35%	44%	40%	42%	39%	37%	37%	42%	40%	43%	41%
Fluvanna Portion GPD	753,001	1,204,802	1,797,883	2,876,612	1,797,883	2,876,612	2,413,259	3,861,214	2,925,801	4,681,282	2,925,801	4,681,282	3,438,343	5,501,349
Total Return Flow														
Total Demand less 10%	1,478,069	2,945,411	4,603,840	7,366,144	3,636,340	6,398,644	5,173,682	8,858,391	7,180,741	11,489,186	6,213,241	10,521,686	7,252,801	12,184,981
% Return to York River Watershed	54%	63%	65%	65%	56%	60%	58%	61%	63%	63%	58%	60%	57%	59%
Total GPD to York River Watershed	800,368	1,861,089	2,985,746	4,777,193	2,018,246	3,809,693	3,001,749	5,383,298	4,547,520	7,276,033	3,580,020	6,308,533	4,158,292	7,233,767
% Return to James River Watershed	46%	37%	35%	35%	44%	40%	42%	39%	37%	37%	42%	40%	43%	41%
Total GPD to James River Watershed	677,701	1,084,321	1,618,094	2,588,951	1,618,094	2,588,951	2,171,933	3,475,093	2,633,221	4,213,154	2,633,221	4,213,154	3,094,509	4,951,215

1 Data from Louisa County Long Range Regional Water Supply Plan, dated June 2011
2 Data from Fluvanna County Regional Water Supply Plan, dated April 2010
3 The Northeast Creek Water Treatment Plant is rated at 1.0 MGD per Dewberry PER, dated June 2013.
4 It is proposed that the withdrawal limits of 4.04 MGD average daily and 7.464 MGD peak daily be permitted. These limits reflect existing permitted capacity at the Louisa Northeast Creek WTP.
5 Proposed Demands are increased by 7.5% to account for treatment plant residuals that are not delivered to customers as treated water.
6 Economic Development projections based upon previous prospect requests from RFI's and VEDP provided information
7 Peak Factor for Louisa is increased above 1.6 due to adjustment of demand while recognizing existing withdrawal of 1,000,000 at the Northeast Creek WTP.
8 Peak Factor for combined Louisa and Fluvanna is increased above 1.6 due to adjustment of demand while recognizing existing withdrawal of 1,000,000 at the Northeast Creek WTP.
9 Two summary columns are indicated to summarize the adjusted Peak Factors due to adjustments in demands while recognizing existing withdrawal of 1,000,000 at the Northeast Creek WTP.

RECEIVED

By Virginia Marine Resources Commission at 10:34 am, Dec 08, 2014

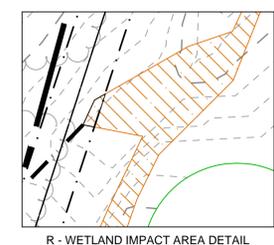
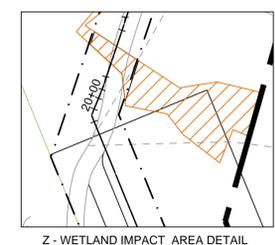
Add'l Info/Revisions



ENVIRONMENTAL IMPACTS*

IMPACT LOCATION*	TEMPORARY IMPACTS			PERMANENT IMPACTS
	WETLAND S.F.	STREAM L.F.	SURFACE WATER S.F.	SURFACE WATER S.F.
Z - WETLAND	360			
Y - STREAM CROSSING		30		
Q - STREAM CROSSING		30		
R - WETLAND	105			
O - STREAM CROSSING		30		
N - RIVANNA RIVER CROSSING	NONE	NONE		
L - STREAM CROSSING		30		
AA - INTAKE JAMES RIVER			3,000	600
TOTAL IMPACTS	465 S.F. (0.011 Ac.)	120 L.F.	3,000 S.F. (0.069 Ac.)	600 S.F. (0.014 Ac.)

*LETTERING AND SEQUENCING FROM WETLAND DELINEATION BY TIMMONS GROUP DATED FEBRUARY, 2014



THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 BOULDER PARKWAY, SUITE 300, RICHMOND, VA 23225
TEL: 804.280.6500 FAX: 804.286.1016 www.timmons.com

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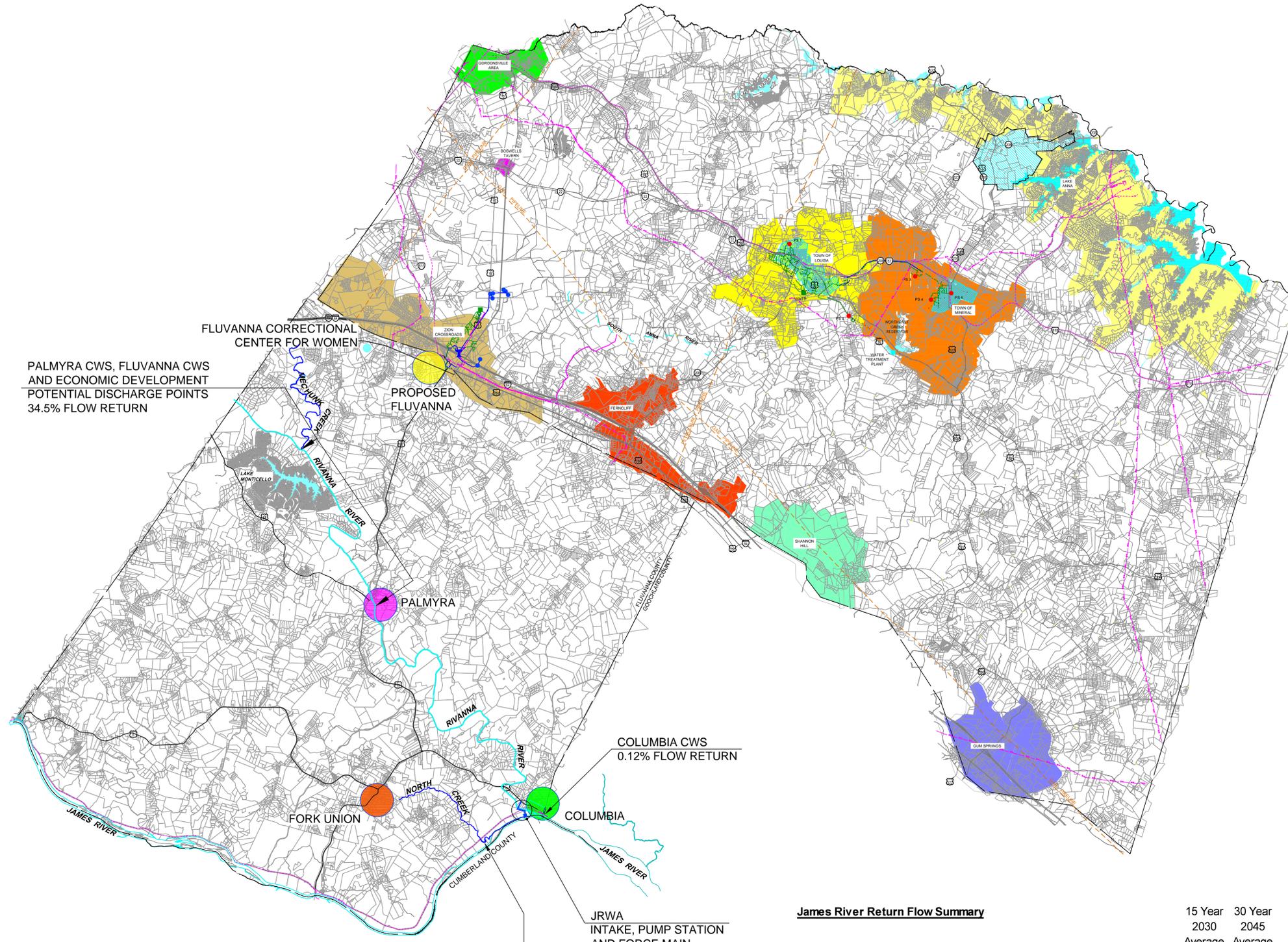
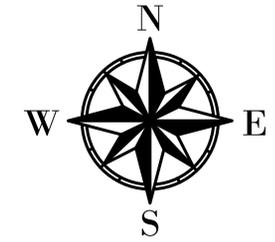
DATE
12/05/2014
DRAWN BY
J. CARTER
DESIGNED BY
D. SAUNDERS
CHECKED BY
D. SAUNDERS
SCALE
AS SHOWN

TIMMONS GROUP

SITE PLAN
JAMES RIVER WATER AUTHORITY
JRWA RAW WATER INTAKE, PUMP STATION AND FORCE MAIN
JOB NO. 34967
SHEET NO.

L:\2011\34967 - JRWA Joint Permit Application\DWG\Sheets\RWPS-SITE.dwg | Plotted on 12/5/2014 6:59 PM | by James Carter

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LOUISA COUNTY COMPREHENSIVE PLAN GROWTH AREAS

- FERNCLIFF
- ZION CROSSROADS
- BOSWELLS TAVERN
- SHANNON HILL
- GUM SPRINGS
- TOWN OF LOUISA
- TOWN OF MINERAL
- LAKE ANNA
- GORDONSVILLE AREA
- LAKE ANNA SERVICE AREA

LEGEND

- EXISTING TOWN BOUNDARIES
- EXISTING SEWER PUMP STATION
- EXISTING SEWER FORCEMAIN
- EXISTING GRAVITY SEWER
- EXISTING WASTE WATER TREATMENT PLANT
- EXISTING WATERLINE
- EXISTING WELL
- EXISTING WATER TREATMENT PLANT
- EXISTING GAS PIPE LINE
- EXISTING PETROLEUM PIPE LINE
- EXISTING OVERHEAD POWER / TELEPHONE
- PROPOSED RECLAIMED WATERMAIN
- PROPOSED SEWER FORCEMAIN
- PROPOSED GRAVITY SEWER
- PROPOSED RAW WATERLINE
- PROPOSED WATERLINE
- WATER STORAGE TANK
- PROPOSED SEWER PUMP STATION
- PROPOSED WATER TREATMENT PLANT

FLUVANNA COUNTY COMMUNITY WATER SYSTEMS

- PROPOSED FLUVANNA
- PALMYRA
- COLUMBIA
- FORK UNION

PALMYRA CWS, FLUVANNA CWS AND ECONOMIC DEVELOPMENT POTENTIAL DISCHARGE POINTS 34.5% FLOW RETURN

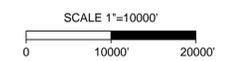
FORK UNION CWS DISCHARGE POINT 5.41% FLOW RETURN FROM FORK UNION VIA NORTH CREEK; +/- 6.7 MILES TO INTAKE LOCATION

COLUMBIA CWS 0.12% FLOW RETURN

JRWA INTAKE, PUMP STATION AND FORCE MAIN

James River Return Flow Summary

	15 Year 2030 Average	30 Year 2045 Average	
Palmyra CWS, Fluvanna CWS, Economic Development Areas	37.9%	36.7%	via Rivanna River
Fork Union CWS	6.0%	5.2%	via North Creek
Columbia CWS	0.1%	0.1%	Directly to James River
Total Flow Returned to the James River	44.0%	42.0%	



DECEMBER 5, 2014



JRWA OVERALL MAP INDICATING DEMAND CENTERS AND RETURN FLOWS TO THE JAMES RIVER



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