Middleton Westport Joint Zoning Committee Agenda

Wednesday June 24, 2015 7:00 PM
To be Held in Council Chambers at City Hall
7426 Hubbard Avenue, Middleton WI, 53562

1) **Approve Minutes of 5-27-15**
2) **Discussion of the Community of Bishops Bay Stormwater Management System**
3) **Adjourn**

Notice is hereby given that a majority of the members of the Common Council may attend this meeting to gather information about a subject over which the Common Council has decision–making responsibility. If a quorum of the Common Council attends this meeting, no action will be taken by the Common Council at this meeting.

Any person who has a qualifying disability as defined by the American With Disabilities Act that requires the meeting or materials at the meeting to be in an accessible location or format must contact the City Administrator at (608) 827-1050, 7426 Hubbard Ave., Middleton, WI at least 24 hours prior to the commencement of the meeting so that any necessary arrangements can be made to accommodate each request.

POSTED: 6/18/2015 9:37 AM

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MEMORANDUM

To: Tom Wilson, Town of Westport
Eileen Kelly, City of Middleton

From: Matthew W. Schreiner, PE

Subject: Stormwater Management Design for The Community of Bishops Bay LLC

Date: June 12, 2015

This memo is intended to clarify the stormwater management requirements for The Community of Bishops Bay LLC, describe the changes made to the peak flow rate and watershed draining to the Grosse property since construction started, and describe the changes expected to the peak flow rate and watershed upon full build out of the Back Nine Neighborhood.

The stormwater management requirements for The Community of Bishops Bay have been set by the City of Middleton, Town of Westport and the Capital Area Regional Planning Commission (CARPC) and are attached for reference.

The pre-settlement watershed draining to the Grosse property consisted of 89.53 AC, and during the 100 year storm, conveyed 234.79 cfs via a swale through the Grosse property, eventually reaching Dorn Creek. Pre-settlement is defined in the City of Middleton and Town of Westport ordinances as natural undeveloped condition. When the Herbrand Sand and Gravel Pit began mining operations, portions of this watershed started to be diverted from the Grosse property. Prior to closure of the pit, a total of 42.48 AC was diverted from the Grosse property. This diversion changed the flow the Grosse's were experiencing during the 100 year storm from 234.79 cfs to 96.80 cfs, see Table 1.

The former Herbrand Sand and Gravel Pit was closed (filled in) and remediated in the Summer of 2011 and construction at The Back Nine, Phase 1 and Callaway Court, Phase 1 began in 2012. The Back Nine, Phase 2 was constructed in 2014 and more construction is planned for 2015. As part of the overall stormwater management plan for these developments, stormwater management facilities have been built or are proposed for the watershed draining to the Grosse property. These stormwater management facilities include bioretention basins, wet ponds, infiltration ponds, and rain gardens.

These facilities have been designed to control both the rate of runoff and the volume of runoff from the development. Upon completion of the entire Back Nine neighborhood (The Back Nine Phase 3 & 4, Callaway Court Phase 2, Lot 9, Paragon Phase 3) the watershed draining to the Grosse property will consist of 80.60 AC, and will convey 87.38 cfs during the 100 year storm. This runoff rate is 10% less than the rate experienced when the pit was diverting water and 63% less than the rate experienced during pre-settlement.

Per the City ordinance, The Community of Bishops Bay is required to match the post-developed runoff rates to the pre-settlement runoff rates. The Community of Bishops Bay is exceeding these stormwater management requirements, see Table 1.

TABLE 1: Peak Runoff Control (City of Middleton Curve Numbers and Rainfall Data)

	Existing (cfs) WITH QUARRY		Pre-Settlement (cfs) NO QUARRY		Post Development With Controls (cfs)	
	PB	Grosse	PB	Grosse	PB	Grosse
Storm	11.65 AC	47.05 AC	11.65 AC	89.53 AC	7.67 AC	80.6 AC
1	2.53	6.32	2.53	17.28	3.64	4.31
2	4.79	10.05	4.79	27.06	5.45	7.63
5	10.5	19.38	10.5	51.21	9.3	18.87
10	16.44	29.79	16.44	77.04	13.06	32.83
25	27.56	50.18	27.56	126.15	19.82	46.48
100	52.02	96.8	52.02	234.79	34.14	87.38

PB = Pheasant Branch Note: Infiltration is not accounted for in Peak Runoff Rate Control (assumes failure of infiltration basins) per City of Middleton Ordinance.

During construction of The Back Nine Phase 1 and Phase 2, erosion issues resulted in the conveyance of sediment to the Grosse property. During the Spring of 2014, a portion of the swale on the Grosse property eroded and created a large washout. To address this issue, The Community of Bishops Bay worked with the Grosse's to determine an acceptable solution to not only fix the washout, but to decrease the likelihood of the erosion problem happening again. Per the Grosse's request, the washout was filled in the Fall of 2014 and a storm sewer pipe was constructed to convey water from the their south property line to their pond. To date, we understand that this solution is functioning properly and no erosion issues have occurred on the Grosse property.

On 6/5/15, I met with the Grosse's, Dick Hanzel, Eileen Kelly and Tom Wilson to discuss the watershed draining to the Grosse property. During the meeting we discussed the results presented in Table 1. We also discussed several changes that could be made to divert water from the Grosse property and what effect that would have on the flow rate. Two of the main options discussed are presented below.

Divert Bishops Bay Parkway Storm Sewer:
The stormwater basins near Bishops Bay Golf Course convey water through storm sewers north under Bishops Bay parkway to an infiltration basin immediately south of the Grosse property. During our meeting we discussed if this pipe could be diverted north and around the eastern side of the Grosse property. This pipe was not originally diverted north because it would require a deep bury depth (15') and was not required per the stormwater ordinance. As the Parkway has been constructed in this area, we estimate that it would cost $175,000.00 to re-route the pipe, reconstruct the Parkway and re-construct the downstream stormwater swales and basins to accommodate this change. However, this would decrease the watershed draining to the Grosse property by 6.87 AC, and decrease the runoff rate to 78 cfs for the 100 year storm.

Divert more land from the Lot 9 development to Pheasant Branch Creek:
The Lot 9 development is currently conveying 2 AC to Pheasant Branch Creek and 5.53 AC to the Grosse property. During the February 18, 2015 Water Resources Management Commission Meeting, the Commission directed Vierbicher to divert water from Pheasant Branch Creek because downstream from the development they have erosion occurring in the Pheasant Branch Creek. If the total 7.53 AC designed to drain to the Grosse property were diverted to Pheasant Branch Creek, it would only decrease the peak runoff rate (as compared to the current proposed condition) for the 100 year event by 1.4% (78.74 cfs total).

We understand that the Grosse's have had major erosions issues in the past. Clearly we have demonstrated that we have met the requirements of the City, Town and CAPRC when planning to

direct runoff to the Grosse property. We believe that that storm sewer pipe constructed last Fall, and the overall stormwater design for the development, will significantly reduce the likelihood of erosion on the Grosse property.

Stormwater Management Design Criterion			
	City of Middleton	**Town of Westport**	**CARPC/Bishops Bay**
Peak Runoff Rate Control	Control peak rates of runoff for the 1, 2, 10, 25, and 100-year, 24 hour storm events to the pre-settlement levels	Control peak rates of runoff for the 1, 2, 10, 25, and 100-year, 24 hour storm events to the pre-development levels	Control peak rates of runoff for the 1, 2, 5, 10, 25, and 100-year 24-hour design storm to "pre-settlement" levels in accordance with the City of Middleton Stormwater Ordinance
Groundwater Recharge	Maintain WGNHS pre-development groundwater recharge rates (10 inches/year)	Maintain WGNHS pre-development groundwater recharge rates	Maintain WGNHS pre-development groundwater recharge rates (9 to 11 inches per year) with no caps on the extent of infiltration areas
Water Quality	80% Reduction of Total Suspended Solids	80% Reduction of Total Suspended Solids	80% Reduction of Total
Runoff Volume Control	Post-development infiltration volume is at least 90% of the predevelopment infiltration volume, based on average annual rainfall.	• Post-development infiltration volume shall be at least 90% of the pre-development infiltration volume, based upon average annual rainfall. • Pre-Developed to Post-Developed 100-year, 24 hour storm event	• Control the increase in runoff volume for the 100-year 24-hour design storm in accordance with the Town of Westport Stormwater Ordinance • Control post development runoff volumes to be equal to or less than predevelopment runoff volumes for the one-year average annual rainfall period, as well as the five year average rainfall period
Oil and Grease	Treat first ½" of runoff	Treat first ½" of runoff	Treat first ½" of runoff

Design Inputs		
	Peak Runoff Rate Control (City of Middleton)	**Runoff Volume Control (Town of Westport)**
Rainfall (24-hour design storm)	1-year = 2.50 inches 2-year = 2.90 inches 5-year = 3.60 inches 10-year = 4.20 inches 25-year = 5.18 inches 100-year = 7.06 inches	1-year = 2.50 inches 2-year = 2.90 inches 5-year = 3.60 inches 10-year = 4.20 inches 25-year = 4.80 inches 100-year = 6.00 inches
Pre-developed /Pre- settlement Runoff Curve Number	New Development: HSG A - 30 HSG B - 58 HSG C - 71 HSG D – 78 Offsite: TR-55-specified curve numbers for other land uses shall be used **Golf Course - 80	Agricultural: HSG A - 51 HSG B - 68 HSG C - 79 HSG D – 83 TR-55-specified curve numbers for other land uses shall be used **Golf Course - 80

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LEGEND

- EXISTING MAJOR CONTOUR
- 950 EXISTING MINOR CONTOUR
- PRE-DEVELOPEMENT WATERSHED
- PROPERTY BOUNDARY
- EXISTING CULVERT

GRAPHIC SCALE FT 0 100 200 400

N W E S

- PHEASANT BRANCH (11.65 ACRES)
- GROSSE POND (26.82 ACRES) **PLUS DRAINAGE FROM GROSSE SOUTHEAST PROPERTY CORNER (47.05 ACRES + 26.82 ACRES = 73.87 ACRES)
- QUARRY (42.49 ACRES)
- GROSSE SOUTHEAST PROPERTY CORNER (47.05 ACRES)
- NORTH (54.55 ACRES)

CITY LIMITS

CITY LIMITS

CITY LIMITS

COUNTY HIGHWAY Q

HIGHWAY "Q"

30S 3.76 AC
21S 2.09 AC
23S 2.61 AC
24S 3.19 AC
22S 29.84 AC
29S 11.27 AC
31S 2.03 AC
28S 15.55 AC
20S 26.51 AC
26S 12.65 AC
25S 12.28 AC
27S 8.24 AC
33S 43.81 AC
32S 8.71 AC

SCALE	AS SHOWN
DATE	4/1/2015
DRAFTER	SCHU
CHECKED	
PROJECT NO.	140224
SHEET	1 OF 1
DWG. NO.	

REVISIONS

NO.	DATE	REMARKS

REVISIONS

NO.	DATE	REMARKS

Pre-Developed Watershed Delineation

The Community of Bishops Bay - Bishops Bay Residences
City of Middleton
Dane County, Wisconsin

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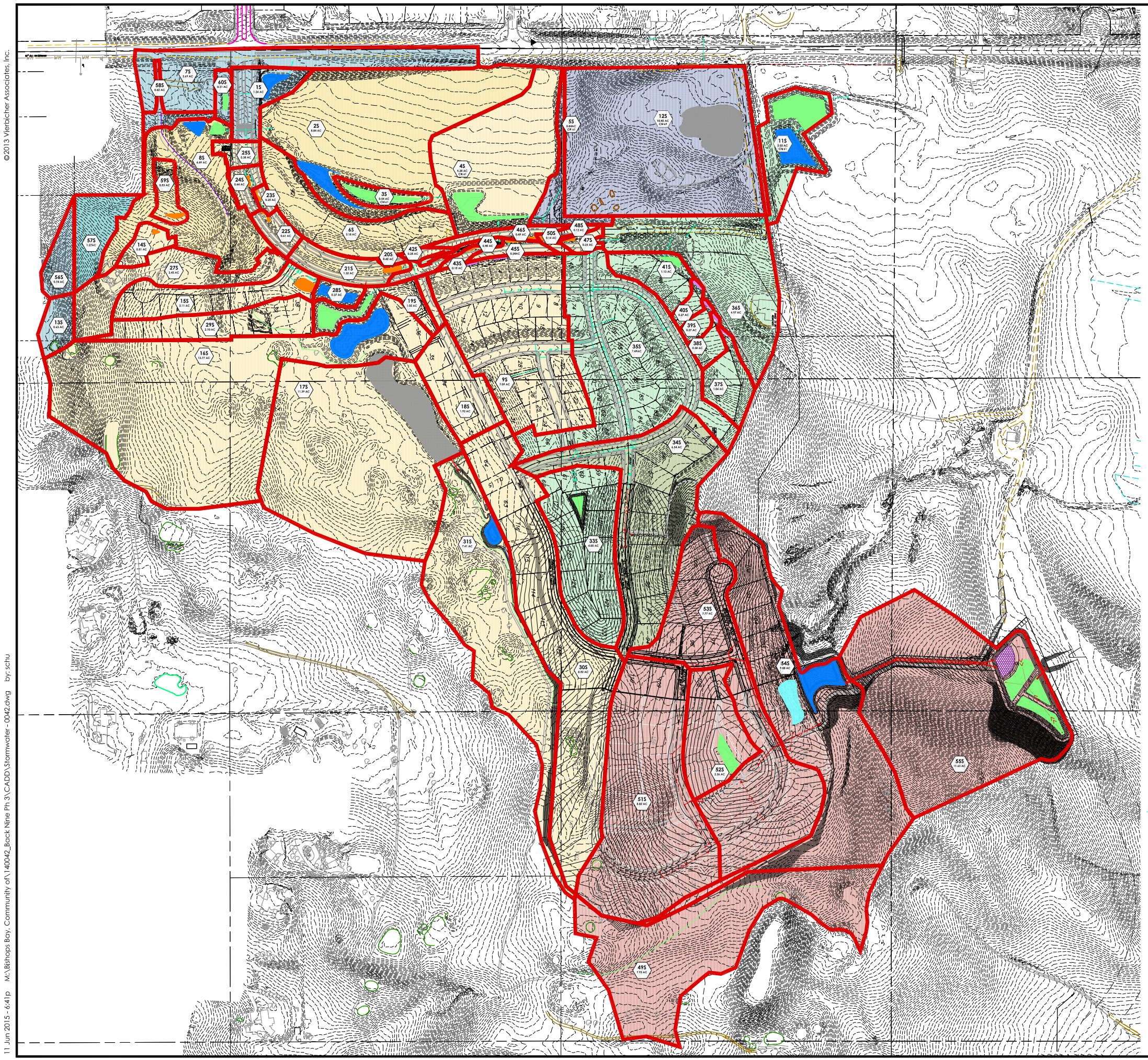

- PHEASANT BRANCH (7.67 ACRES)
- NORTHWEST POINDS (35.25 ACRES)
- GROSSE PROPERTY SOUTHEAST CORNER (80.60 ACRES)
- NORTHEAST PONDS (50.07 ACRES)
- DIRECTLY TO GROSSE POND (11.24 ACRES)
  **PLUS AREA CONVEYED TO GROSSE PROPERTY SOUTHEAST CORNER
  (80.60 ACRES + 11.24 ACRES = 91.84 ACRES)

PROPOSED LEGEND

- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- RIP RAP
- STORM SEWER PIPE
- STORM SEWER MANHOLE
- STORM SEWER ENDWALL
- STORM SEWER CURB INLET/CATCH BASIN
- STORM SEWER CURB INLET/CATCH BASIN W/MANHOLE
- STORM SEWER FIELD INLET
- STORM CLEANOUT
- EXISTING CURB INLET
- EXISTING ENDWALL
- EXISTING FIELD INLET
- EXISTING ROOF DRAIN CLEANOUT
- EXISTING STORM MANHOLE
- EXISTING STORM SEWER LINE (SIZE NOTED)

- EXISTING PONDS OWNED BY OTHERS
- WET DETENTION POND (WP)
- INFILTRATION POND (IP)
- BIO-RETENTION BASIN (BR)
- RAIN GARDEN
- TEMPORARY SEDIMENT BASIN (TS)

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Stormwater Management Plan

The Community of Bishops Bay Phase III
City of Middleton
Dane County, Wisconsin

REVISIONS

NO.	DATE	REMARKS

REVISIONS

NO.	DATE	REMARKS

SCALE: AS SHOWN
DATE: 6/11/2015
DRAFTER: SCHU
CHECKED: MSCH
PROJECT NO.: 140042.00
SHEET: 1 OF 1
DWG. NO.:

11 Jun 2015 - 6:41p M:\Bishops Bay, Community of\140042_Bock Nine Ph 3\CADD\Stormwater - 0042.dwg by: schu