

**STORMWATER TREATMENT DEVICE
ACCESS AND MAINTENANCE AGREEMENT**

After recorded, return to:
Mario Caballero
Stormwater Division
Municipal Utilities Department
City of Stockton
2500 Navy Drive
Stockton, CA 95206

Doc #: 2021-039735
03/03/2021 02:23:35 PM
Page: 1 of 185 Fee: \$566.00
Steve J. Bestolarides
San Joaquin County Recorders
Paid By: SHOWN ON DOCUMENT



MUNICIPAL UTILITIES DEPARTMENT
After Recording Transmit Copy to:

___ Owner of Record
___ Municipal Utilities Department
___ City Clerk (Original)

OWNER NAME (S)
(as shown on deed) &
MAILING ADDRESS ET Stockton Owner, LLC c/o CT Realty

120 S. Central Avenue, Suite 300, St. Louis, MO 93105

O&M CONTACT
PERSON & PHONE # James G. Koman

(314) 261-7348

FACILITY NAME
AND ADDRESS Project Sanchez

6001 Austin Road, Stockton, CA 95215

ASSESSOR PARCEL NO. 181-100-09[REDACTED]

THIS AGREEMENT is made and entered into in Stockton, California, this 21 day of January 2021, by and between ET Stockton Owner, LLC c/o CT Realty hereinafter referred to as "Owner" and the **CITY OF STOCKTON**, a municipal corporation, located in the County of San Joaquin, State of California hereinafter referred to as "CITY,"

WHEREAS, the Owner owns real property ("Property") in the City of Stockton, County of San Joaquin, State of California, depicted in Exhibit "A" and intends to install a pollution control system described in Exhibit "B", both of which are attached hereto and incorporated herein by this reference;

2021-01-21-S005 P

WHEREAS, at the time of initial approval of development project known as Project Sanchez within the Property described herein, the City required the project to employ on-site control measures to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install a (31) bioretention areas, (1) detention basin, (1) pump station hereinafter referred to as "Device," as the onsite control measure to minimize pollutants in urban runoff;

WHEREAS, said Device has been installed in accordance with the requirements of the City of Stockton Stormwater Quality Control Criteria Plan and the Owner's plans and specifications accepted by the City;

WHEREAS, said Device, with installation on private property and draining only private property, is a private facility with all operation, maintenance and replacement; therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, sediment removal, is required to assure peak performance of Device and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. Owner hereby provides the City or City's designee complete access, of any duration, to the Device and its immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City's Director of Municipal Utilities with no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner's expense as provided in paragraph 3 below. The Owner/Operator shall retain all operation and maintenance records at the facility for City inspection, and a copy shall be provided to the City if requested. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.
2. Owner shall use its best efforts to diligently maintain the Device in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of material(s) from the Device and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. When requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.
3. In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the

entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorney's fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full, and Owner hereby agrees to pay such charge within 30 days of receipt of City's written demand for payment.

4. The City may require the owner to post security in form and for a time period satisfactory to the City of guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director may withdraw any previous stormwater related approval with respects to the property on which a Device has been installed until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.
5. This agreement shall be recorded in the Office of the Recorder of San Joaquin County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.
6. In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.
7. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.
8. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.
9. Time is of the essence in the performance of this Agreement.
10. Any notice or demand for payment to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to addresses listed on Page 1 of this agreement either for the Owner or City. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

CITY OF STOCKTON, a
Municipal Corporation

ATTEST: APPROVED AS TO FORM:

By [Signature]
HARRY BLACK
CITY MANAGER

OFFICE OF THE CITY ATTORNEY

By [Signature]
City Attorney

ATTEST:
for [Signature]
CLERK OF THE CITY OF STOCKTON
By [Signature]



ET Stockton Owner, LLC c/o CT Realty
NAME OF PROPERTY OWNER

By [Signature]
PROPERTY OWNER

Name James G Koman

Title Manager

CITY ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA _____
COUNTY OF SAN JOAQUIN _____

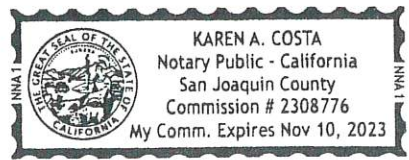
On January 21, 2021 before me, Karen A. Costa, Notary Public
(Insert Name and Title of Officer)

personally appeared Harry Black,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Signature] (Seal)
Signature of Notary



OWNER ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA
COUNTY OF _____)

On _____ before me, _____
(Insert Name and Title of Officer)

personally appeared _____,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary (Seal)

OWNER ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF MISSOURI CALIFORNIA
COUNTY OF ST LOUIS)

On 12-17-2020 before me, Christine Mattingly, Notary Public
(Insert Name and Title of Officer)

personally appeared James G Koman,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she~~/~~they~~ executed the same in his/~~her~~/~~their~~ authorized capacity(ies), and that by his/~~her~~/~~their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Christine Mattingly (Seal)
Signature of Notary



OPERATING AGREEMENT
OF
ET STOCKTON OWNER, LLC

This Operating Agreement (this "Agreement") of **ET STOCKTON OWNER, LLC**, a Delaware limited liability company (the "Company"), is entered into as of August 3, 2020, by ET Stockton, LP, a Delaware limited partnership, as the sole member (the "Member").

WHEREAS, the Company was formed as a limited liability company under the Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq.), as amended (the "Act"), by the execution, delivery and filing of a Certificate of Formation (the "Certificate") in the office of the Secretary of State of the State of Delaware on August 3, 2020;

WHEREAS, the Member desires to set forth the terms and conditions for the operation of the Company and the rights, obligations and duties of the parties hereto.

NOW, THEREFORE, in consideration of the covenants expressed herein, the Member hereby agrees as follows:

1. **Name.** The name of the Company is ET Stockton Owner, LLC.
2. **Certificate of Formation and Qualification to do Business.** The Certificate has been filed in the office of the Secretary of State of the State of Delaware in accordance with the provisions of the Act. The Member (or any representative of the Member) as an authorized person within the meaning of the Act, shall execute, deliver and file, or cause the execution, delivery and filing of, all certificates (and any amendments and/or restatements thereof) required or permitted by the Act to be filed in the office of the Secretary of State of the State of Delaware. The Member (or any representative of the Member) shall also execute, deliver and file, or cause the execution, delivery and filing of, any other certificates (and any amendments and/or restatements thereof) necessary, convenient, advisable, appropriate or desirable for the Company to qualify to do business in any and all jurisdictions in which the Company may wish to conduct business.
3. **Purpose and Powers.**
 - (a) The principal business activity and purpose of the Company shall be to purchase, hold, invest and manage real estate and to transact any or all lawful business for which a limited liability company may be organized under the Act.
 - (b) The Company shall take all actions and shall execute all agreements, documents or other instruments, which, in the sole discretion of the Member, are incidental, necessary, convenient, advisable, appropriate or desirable in connection with the conduct,

promotion or attainment of the business, purposes or activities of the Company set forth in Section 3(a) above.

4. Term; Fiscal Year. The term of the Company commenced on the date the Certificate was initially filed in the office of the Secretary of State of the State of Delaware, and will continue until dissolved as provided herein. The fiscal year of the Company shall be the calendar year or such other period as may hereafter be determined by the Member.

5. Principal Business Office. The principal business office of the Company shall be 120 South Central Avenue, Suite 300, St. Louis, Missouri 63105. The Company may relocate its principal business office to any other place or places as the Member may from time to time deem necessary, convenient, advisable, appropriate or desirable. Additional offices may be maintained and acts done at any other place necessary, convenient, advisable, appropriate or desirable for accomplishing the purposes of the Company, all as determined by the Member.

6. Registered Office and Agent. The registered agent for service of process and the registered office shall be that person or entity and location reflected in the Certificate as filed in the office of the Secretary of State of the State of Delaware. The Member may, from time to time, change the registered agent or office through appropriate filing with the office of the Secretary of State of the State of Delaware. In the event the registered agent ceases to act as such for any reason or the registered office shall change, the Member shall promptly designate a replacement registered agent or file a notice of change of address as the case may be.

7. Member. The address of the Member is 120 South Central Avenue, Suite 300, St. Louis, Missouri 63105, or such other address that the Member provides to the Company.

8. Limited Liability. Except as otherwise provided by the Act, the debts, obligations and liabilities of the Company, whether arising in contract, tort or otherwise, shall be solely the debts, obligations and liabilities of the Company, and neither the Member nor any officer or manager of the Company shall be obligated personally for any such debts, obligations or liabilities of the Company by reason of being a member, officer or manager of the Company or exercising any rights under this Agreement.

9. Indemnification.

(a) Subject to the limitations set forth in this Section 9(a), the Company shall indemnify, protect, defend and hold harmless each Indemnitee (as defined in Section 0), from and against all losses, liabilities, damages and expenses incurred by such Indemnitee as a result of any actions or omissions taken or omitted in connection with providing services to the Company, or the performance of the Indemnitee's duties under this Agreement, or by reason of any action or omission taken or omitted on behalf of the Company. Such indemnity shall cover, without implied limitation, judgments, settlements, fines, penalties and counsel and expert fees incurred in connection with the defense or disposition of any action, suit or other proceeding, whether civil or criminal, before or threatened to be brought before any court or administrative body, in which an Indemnitee may be or may have been involved as a party or otherwise, or with which it may have been threatened, by reason of being or having been an Indemnitee, or by

reason of any act or omission on behalf of the Company, or otherwise taken or omitted in connection with providing services to the Company, or the performance of the Indemnitee's duties under this Agreement. Notwithstanding the foregoing, no Indemnitee shall be entitled to indemnification pursuant to this Section 0 with respect to any matter as to which there has been an initial determination by a court of competent jurisdiction that such Indemnitee has committed an act or omission that constituted fraud, gross negligence, or willful misconduct that in each case has had a material adverse effect on the Company.

(b) The indemnification provided by this Section 0 shall be in addition to any other rights to which an Indemnitee or any other Person (as defined in Section 9(e)) may be entitled under any agreement, as a matter of law or otherwise, and shall continue as to an Indemnitee who has ceased to serve in such capacity unless otherwise provided in a written agreement pursuant to which such Indemnitee is indemnified. The Member expressly intends that the provisions of this Section 0 shall be interpreted to reflect an ordering of liability for potentially overlapping or duplicative indemnification payments, with any applicable third-party indemnifier having primary liability and the Company having only secondary liability.

(c) In no event may an Indemnitee subject the Member to personal liability by reason of the indemnification provisions set forth in this Agreement.

(d) The provisions of this Section 0 are for the benefit of the Indemnitees, their heirs, successors and assigns and shall not be deemed to create any rights for the benefit of any other Persons. Any amendment, modification or repeal of this Section 0 or any provision hereof shall be prospective only and shall not in any way affect the limitations on the Company's liability to any Indemnitee under this Section 0 as in effect immediately prior to such amendment, modification, or repeal with respect to claims arising from or relating to matters occurring, in whole or in part, prior to such amendment, modification or repeal, regardless of when such claims may arise or be asserted.

(e) As used in this Section 0, the term "Indemnitee" or "Indemnitees" shall mean (i) any Person made a party to a proceeding by reason of his, her or its status as (A) a manager or the Member, or (B) a member, partner or shareholder of any manager or the Member, or (C) a director, officer or employee of the Company, any manager, the Member or any direct or indirect member, partner or shareholder of any manager or the Member and (ii) such other Persons as the Member may designate from time to time (whether before or after the event giving rise to potential liability), in its sole and absolute discretion.

(f) As used in this Section 0, the term "Person" or "Persons" shall mean a corporation, governmental unit, association, retirement system, international organization, joint venture, partnership, limited liability company, trust or individual.

10. Transfer of Membership Interests. Except to the extent otherwise expressly agreed in writing, the Member may transfer all or any portion of its interest in the Company to any person or entity at any time.

11. Admission. The Member is deemed admitted as the Member of the Company upon its execution and delivery of this Agreement.

12. Reserved.

13. Capital Contributions. The Member will contribute capital to the Company in return for all interests in the profits or losses of the Company and all items of income, gain, loss and deduction. Contributions of capital shall be made by the Member in cash, property or services rendered or a promissory note or other obligation to contribute cash or property or to render services, or any combination of the foregoing in such amounts and at such times as the Member may determine.

14. Distributions. Distributions may be made to the Member at such times and in such amounts as determined by the Member.

15. Management.

(a) The Company shall be managed by a manager or managers (each a "Manager" and, collectively, the "Managers"). The Member shall have the right to appoint, remove and replace any Manager at any time. If at any time there is no appointed or otherwise designated Manager, then the Member shall be the Manager. The initial Manager of the Company shall be James G. Koman.

(b) The business, policies, property and affairs of the Company shall be managed exclusively by the Manager or Managers. Each Manager shall have full, complete and exclusive authority and discretion to control the business, policies, property and affairs of the Company, to make all decisions regarding those matters and to perform any and all other acts or activities customary or incident to the management of the Company's business, property and affairs, including the naming of officers of the Company pursuant to Section 15(c) below and the delegation of responsibility for the preceding to such officers. There is no requirement that any Manager hold a meeting in order to take action on any matter. Unless otherwise provided in this Agreement, any action taken by any Manager and the signature of any Manager on any agreement, contract, instrument or other document on behalf of the Company, shall be sufficient to bind the Company and shall conclusively evidence the authority of any Manager and the Company with respect thereto.

(c) Each Manager may appoint officers at any time. The officers of the Company, if deemed necessary by a Manager, may include a president, one or more vice presidents, secretary, treasurer, chief financial officer, and such other officers as a Manager determines to be appropriate. The officers shall serve at the pleasure of the Manager or Managers, subject to all rights, if any, of an officer under any contract of employment. An officer need not be a Member of the Company, and the officers shall exercise such powers and perform such duties as shall be determined from time to time by the Manager or Managers. The Member hereby appoints the officers set forth on Schedule A attached hereto with the titles as set forth next to each such officer's name.

(d) Subject to the rights, if any, of an officer under a contract of employment, any officer may be removed, either with or without cause, by any Manager at any time. A

vacancy in any office because of death, resignation, removal, disqualification or any other cause shall be filled in the manner prescribed in this Agreement for regular appointments to that office.

(e) Except as otherwise provided in the Act, no Manager shall be obligated personally for any debt, obligation or liability of the Company or of any other Member, whether arising in contract, tort or otherwise, solely by reason of being a Manager. Except as otherwise provided in the Act, by law or expressly in this Agreement, no Manager shall have any fiduciary or other duty to another Member with respect to the business and affairs of the Company, and no Manager shall be liable to the Company or any other Member for acting in good faith reliance upon the provisions of this Agreement. No Manager shall be personally liable to the Company or to its Members for acting in good faith reliance upon the provisions of this Agreement, or for breach of any fiduciary or other duty that does not involve (i) a breach of the duty of loyalty to the Company or its Members, (ii) acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law; or (iii) a transaction from which the Manager derived an improper personal benefit. The failure of the Company to observe any formalities or requirements relating to the exercise of its powers or the management of its business or affairs under this Agreement or the Act shall not be grounds for making the Managers responsible for any liability of the Company

16. Dissolution. The Company shall be dissolved without further action by the Member and its affairs wound up upon the first to occur of any of the following events:

(a) The written consent of the Member;

(b) The sale or distribution of all or substantially all of the Company's assets;

(c) The retirement, resignation or dissolution of the Member or the occurrence of any other event that terminates the continued membership of the Member in the Company unless the business of the Company is continued in a manner permitted by this Agreement or the Act; or

(d) the entry of a decree of judicial dissolution under Section 18-802 of the Act.

In the event of dissolution, the Company shall conduct only such activities as are necessary to wind up its affairs (including the sale of the assets of the Company in an orderly manner), and the assets of the Company shall be applied in the manner, and in the order or priority, set forth in Section 18-804 of the Act.

17. Governing Law. This Agreement shall be governed by, and construed under, the laws of the State of Delaware (without regard to conflict of laws principles), all rights and remedies being governed by said laws.

18. Amendments. This Agreement may be modified, altered, supplemented or amended pursuant to a written agreement executed and delivered by the Member.

19. **Rights of Creditors and Third Parties Under Agreement.** This Agreement is entered into by the Member for the exclusive benefit of the Member and its permitted successors, transferees, assigns and legal representatives. Except as provided in **Section 0** above, this Agreement is expressly not intended for the benefit of any creditor of the Company or any other person or entity. Except and only to the extent provided by applicable law, no such creditor or third party shall have any rights under this Agreement or any other agreement (unless explicitly provided otherwise therein) between the Company and the Member.

20. **Severability.** Any term or provision of this Agreement that is invalid or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity or lack of enforceability without rendering invalid or unenforceable the remaining terms and provisions of this Agreement, or affecting the validity or enforceability of any of the terms or provisions of this Agreement in any other jurisdiction.

21. **Binding Effect.** Except as otherwise provided in this Agreement, every covenant, term, and provision of this Agreement shall be binding upon and inure to the benefit of the Member and its successors, transferees, and assigns.

22. **Headings.** Section and other headings contained in this Agreement are for reference purposes only and are not intended to describe, interpret, define, or limit the scope, extent, or intent of this Agreement or any provision hereof.

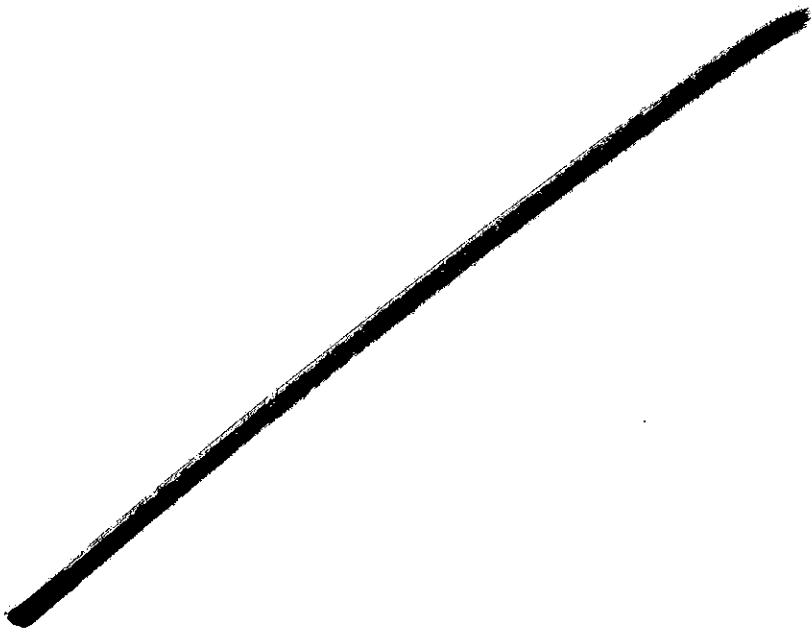
23. **Entire Agreement.** This Agreement embodies the entire agreement and understanding of the Member with respect to the subject matter hereof and supersedes all prior agreements and understandings relating to such matter.

[The remainder of this page has been intentionally left blank.]

Schedule A

Officers

Name	Title
James G. Koman	President
Jason Ridgway	Senior Vice President
Kerry Gawrych	Secretary



IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Agreement as of the date first set forth above.

MEMBER:

ET STOCKTON, LP,
a Delaware limited partnership

By: ETGUG STOCKTON GP, LLC,
a Delaware limited liability company,
its General Partner

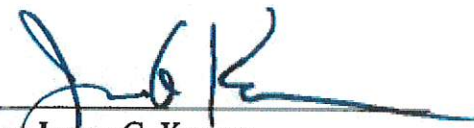
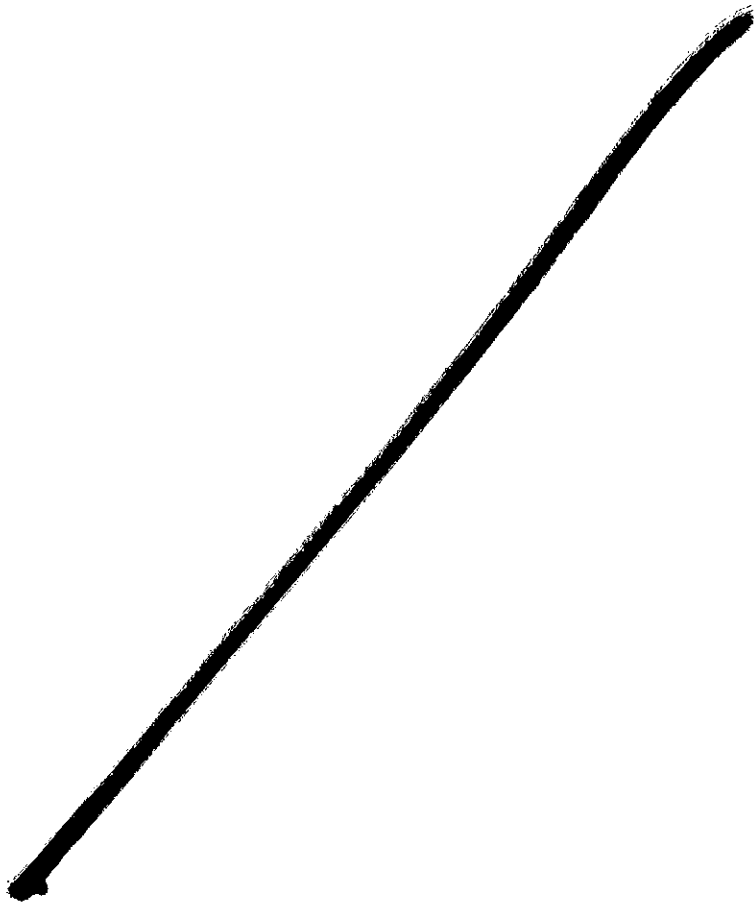
By: 
Name: James G. Koman
Title: Manager



EXHIBIT A

(Deed Copy)



Recording Requested By:
First American Title Insurance Company
National Commercial Services, Ontario, CA

Doc #: 2020-113540
09/03/2020 01:27:07 PM
Page 1 of 3 Fee: \$30.00 Tax Paid: \$18,150.00
Steve J. Bestolarides
San Joaquin County Recorder
Paid By: FIRST AMERICAN TITLE INSURANCE

Order No. NCS-901253
Escrow No. NCS-901253
Loan No.

WHEN RECORDED MAIL TO:

ET Stockton Owner, LLC
c/o CT Realty
4343 Von Karman Ave., Suite 200
Newport Beach, CA

MAIL TAX STATEMENTS TO: Same as above.

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DOCUMENTARY TRANSFER TAX \$ 18,150.00

Computed on the consideration or value of property conveyed, OR

Computed on the consideration or value less liens or encumbrances remaining at time of sale.

Man Kan - First American Title
Signature of Declarant or Agent determining tax - Firm Name

GRANT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, STEVEN A. SANCHEZ, SUCCESSOR TRUSTEE OF TRUST B UNDER THE WILL OF ROBERTA SANCHEZ, DECEASED ("Grantor") hereby GRANT(S) to ET STOCKTON OWNER, LLC, a Delaware limited liability company ("Grantee"), the real property in the County of San Joaquin, State of California, described as follows:

See Exhibit "A" attached hereto and incorporated herein by this reference ("Property").

EXCEPTING AND RESERVING FROM THE PROPERTY, all previously unreserved minerals, oil, gas, petroleum and other hydrocarbon substances in or under or which may be produced from the above-described land which underlies a plane parallel to and 500 feet below the present surface of such land for the purpose of prospecting for, the exploration, development, production, extraction and taking of such minerals, oil, gas, petroleum, other hydrocarbon substances and water from such land by means of mines, wells, derricks or other equipment from surface locations on adjoining or neighboring land or lying outside of the above-described land, it being understood that the owner of such minerals, oil, gas, petroleum and other hydrocarbon substances, as set forth above, shall have no right to enter upon the surface or any portion thereof above such plane parallel to and 500 feet below the present surface of such land for any purpose whatsoever.

Dated: 8-20-20

GRANTOR:

TRUST B UNDER THE WILL OF ROBERTA SANCHEZ

By: S Sanchez
* Steven A. Sanchez, Successor Trustee
* AKA Steven Anthony Sanchez

Order No. NCS-901253
Escrow No. NCS-901253
Loan No.

WHEN RECORDED MAIL TO:

ET Stockton Owner, LLC
c/o CT Realty
4343 Von Karman Ave., Suite 200
Newport Beach, CA

MAIL TAX STATEMENTS TO: Same as above.

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DOCUMENTARY TRANSFER TAX \$ 18,150.00

Computed on the consideration or value of property conveyed, OR

Computed on the consideration or value less liens or encumbrances remaining at time of sale.

Man Kar - First American Title
Signature of Declarant or Agent determining tax - Firm Name

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See Exhibit "A" attached hereto and incorporated herein by this reference ("Property").

EXCEPTING AND RESERVING FROM THE PROPERTY, all previously unreserved minerals, oil, gas, petroleum and other hydrocarbon substances in or under or which may be produced from the above-described land which underlies a plane parallel to and 500 feet below the present surface of such land for the purpose of prospecting for, the exploration, development, production, extraction and taking of such minerals, oil, gas, petroleum, other hydrocarbon substances and water from such land by means of mines, wells, derricks or other equipment from surface locations on adjoining or neighboring land or lying outside of the above-described land, it being understood that the owner of such minerals, oil, gas, petroleum and other hydrocarbon substances, as set forth above, shall have no right to enter upon the surface or any portion thereof above such plane parallel to and 500 feet below the present surface of such land for any purpose whatsoever.

Dated: 8-20-20

GRANTOR:

TRUST B UNDER THE WILL OF ROBERTA SANCHEZ

By: S Sanchez
* Steven A. Sanchez, Successor Trustee
* AKA Steven Anthony Sanchez

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STATE OF CALIFORNIA

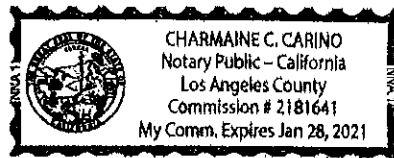
COUNTY OF Los Angeles,

On 8/20/2020, ^{cc} 20 before me, Charmaine C. Carino Notary Public, personally appeared Steven Anthony Sanchez (insert name(s) of signer(s)) who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Signature]
(SIGNATURE OF NOTARY)



(Notary Seal)

EXHIBIT "A"

LEGAL DESCRIPTION

The land referred to is situated in the unincorporated area of County of San Joaquin, State of California, and is described as follows:

THE NORTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 7 EAST, MOUNT DIABLO BASE AND MERIDIAN.

EXCEPT THE INTEREST CONVEYED TO COUNTY OF SAN JOAQUIN, BY DEED RECORDED NOVEMBER 25, 1949 IN VOL. 1083 OF OFFICIAL RECORDS, PAGE 295, SAN JOAQUIN COUNTY RECORDS.

ALSO, EXCEPT THE INTEREST CONVEYED TO THE COUNTY OF SAN JOAQUIN BY DEED RECORDED DECEMBER 9, 1966 IN VOL. 3092 OF OFFICIAL RECORDS, PAGE 83, SAN JOAQUIN COUNTY RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY, A DELAWARE CORPORATION, BY DEED RECORDED APRIL 15, 2003 AS INSTRUMENT NO. 2003-079581, SAN JOAQUIN COUNTY RECORDS.

APN: 181-100-090-000

**EXHIBIT "A" LEGAL DESCRIPTION
PARCEL 2, PARCEL MAP COS 20-01**

ALL THAT CERTAIN REAL PROPERTY SITUATE IN THE UNINCORPORATED AREA OF SAN JOAQUIN COUNTY, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

BEING A PORTION OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 7 EAST, MOUNT DIABLO BASE AND MERIDIAN AND BEING DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH QUARTER CORNER OF SAID SECTION 27 (T1N, R7E), SAID POINT ALSO BEING THE NORTHWESTERLY CORNER OF THE PARCEL OF LAND DESCRIBED IN THAT CERTAIN GRANT DEED TO ANTHONY A. SANCHEZ AND STEVEN A. SANCHEZ, CO-TRUSTEES UNDER THE WILL OF ROBERTA SANCHEZ, TRUST B, RECORDED MAY 18, 2018, AS DOCUMENT NO. 2018-055198, SAN JOAQUIN COUNTY RECORDS;

THENCE ALONG THE NORTHERLY LINE OF SAID SANCHEZ TRUST PARCEL AND THE NORTHERLY LINE OF SECTION 27, SOUTH 89° 58' 14" EAST, 447.06 FEET, TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG LAST SAID LINE, SOUTH 89° 58' 14" EAST, 1306.72 FEET TO THE NORTHWESTERLY CORNER OF THE PARCEL OF LAND DESCRIBED IN THAT CERTAIN GRANT DEED TO BURLINGTON NORTH AND SANTA FE RAILWAY COMPANY, RECORDED APRIL 15, 2003, AS DOCUMENT NO. 2003-079581, SAN JOAQUIN COUNTY RECORDS;

THENCE ALONG THE LINE COMMON TO THE SAID PARCELS THE FOLLOWING TWO (2) COURSES:

- (1) ALONG THE ARC OF A NON-TANGENT 1100.08 FOOT RADIUS CURVE TO THE LEFT, THE CENTER OF WHICH BEARS NORTH 51° 41' 41" EAST, THROUGH A CENTRAL ANGLE OF 50° 02' 54", AN ARC DISTANCE OF 960.93 FEET,
- (2) SOUTH 88°21' 13" EAST, 11.31 FEET, TO A POINT ON THE WESTERLY RIGHT OF WAY LINE OF AUSTIN ROAD, A 60-FOOT-WIDE PUBLIC RIGHT OF WAY AT THIS POINT.

THENCE LEAVING SAID LINE NORTH 89° 43' 29" EAST, 5.00 FEET;

THENCE SOUTH 00° 16' 34" EAST, 62.29 FEET;

THENCE ALONG THE ARC OF A 58.13 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 16° 41' 57", AN ARC DISTANCE OF 16.94 FEET;

THENCE SOUTH 16° 25' 23" WEST, 21.76 FEET;

THENCE ALONG THE ARC OF A 78.13 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 16° 41' 57", AN ARC DISTANCE OF 22.77 FEET;

THENCE SOUTH 00° 16' 34" EAST, 957.15 FEET;

THENCE ALONG THE ARC OF A NON-TANGENT 25.00 FOOT RADIUS CURVE TO THE RIGHT, THE CENTER OF WHICH BEARS SOUTH 31° 03' 22" WEST, THROUGH A CENTRAL ANGLE OF 58° 40' 04", AN ARC DISTANCE OF 25.60 FEET;

THENCE SOUTH 00° 16' 34" EAST, 22.34 FEET;

THENCE NORTH 89° 41' 18" WEST, 2360.78 FEET;

THENCE NORTH 00° 00' 47" WEST, 1229.84 FEET;

THENCE NORTH 47° 13' 05" EAST, 108.98 FEET;

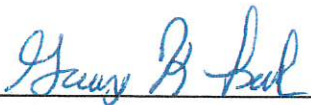
THENCE NORTH 89° 59' 13" EAST, 121.00 FEET;

THENCE NORTH 00° 00' 47" WEST, 225.09 FEET, TO THE **POINT OF BEGINNING**.

CONTAINING 3,313,286 SQUARE FEET OR 76.0626 ACRES, MORE OR LESS.

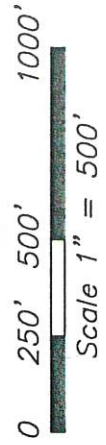
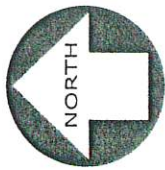
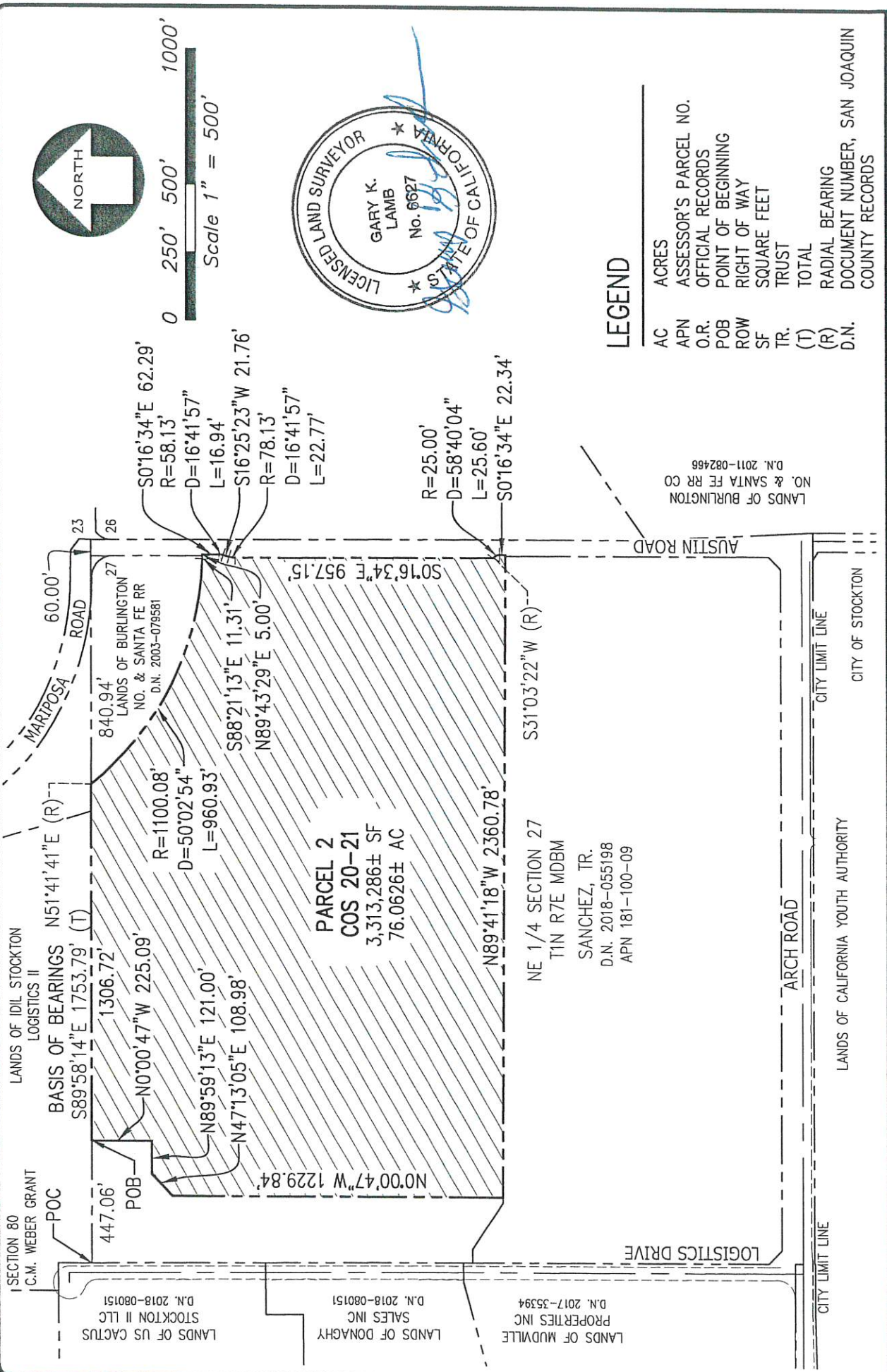
EXHIBIT "B" A PLAT IS ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

KIER & WRIGHT CIVIL ENGINEERS & SURVEYORS, INC.


GARY K. LAMB, P.L.S. 6627

8-26-20
DATE





LEGEND

- AC ACRES
- APN ASSESSOR'S PARCEL NO.
- O.R. OFFICIAL RECORDS
- POB POINT OF BEGINNING
- ROW RIGHT OF WAY
- SF SQUARE FEET
- TR. TRUST
- (T) TOTAL
- (R) RADIAL BEARING
- D.N. DOCUMENT NUMBER, SAN JOAQUIN COUNTY RECORDS

DATE	AUGUST, 2020
SCALE	1" = 500'
BY	GKL
JOB NO.	A07567-119
SHEET	1 OF 1

EXHIBIT "B"
PARCEL 2, COS 20-21

SAN JOAQUIN COUNTY

KIER+WRIGHT

250 Cherry Lane, Suite 107, 208 Manteca, CA 95337
 Phone: (209) 328-1123
 www.kierwright.com

Parcel Map Check Report

Client:

Client

Client Company

Address 1

Date: 8/26/2020 11:34:41 AM

Prepared by:

Preparer

Your Company Name

123 Main Street

Parcel Name: BNDRY-LOT - A07567-119-CR PARCEL 2 COS 20-21

Description:

Process segment order counterclockwise: False

Enable mapcheck across chord: False

North: 2,155,516.5542'

East: 6,358,530.8424'

Segment# 1: Line

Course: S89° 58' 14"E

Length: 1,306.72'

North: 2,155,515.8827'

East: 6,359,837.5622'

Segment# 2: Curve

Length: 960.93'

Radius: 1,100.08'

Delta: 50° 02' 54"

Tangent: 513.54'

Chord: 930.67'

Course: S63° 19' 46"E

Course In: N51° 41' 41"E

Course Out: S1° 38' 47"W

RP North: 2,156,197.7687'

East: 6,360,700.8162'

End North: 2,155,098.1428'

East: 6,360,669.2098'

Segment# 3: Line

Course: S88° 21' 13"E

Length: 11.31'

North: 2,155,097.8179'

East: 6,360,680.5152'

Segment# 4: Line

Course: N89° 43' 29"E

Length: 5.00'

North: 2,155,097.8419'

East: 6,360,685.5151'

Segment# 5: Line

Course: S0° 16' 34"E

Length: 62.29'

North: 2,155,035.5526'

East: 6,360,685.8153'

Segment# 6: Curve

Length: 16.94'

Radius: 58.13'

Delta: 16° 41' 57"

Tangent: 8.53'

Chord: 16.88'

Course: S8° 04' 25"W

Course In: S89° 43' 26"W

Course Out: S73° 34' 37"E

RP North: 2,155,035.2725'

East: 6,360,627.6860'

End North: 2,155,018.8375'

East: 6,360,683.4443'

Segment# 7: Line

Course: S16° 25' 23"W

Length: 21.76'

North: 2,154,997.9654'

East: 6,360,677.2921'

Segment# 8: Curve

Length: 22.77'

Radius: 78.13'

Delta: 16° 41' 57"

Tangent: 11.47'

Chord: 22.69'

Course: S8° 04' 25"W

Course In: S73° 34' 37"E

Course Out: S89° 43' 26"W

RP North: 2,154,975.8759'

East: 6,360,752.2344'

End North: 2,154,975.4993'

East: 6,360,674.1054'

Segment# 9: Line

Course: S0° 16' 34"E

Length: 957.15'

North: 2,154,018.3605'

East: 6,360,678.7179'

Segment# 10: Curve

Length: 25.60'

Radius: 25.00'

Delta: 58° 40' 04"

Tangent: 14.05'

Chord: 24.49'

Course: S29° 36' 36"E

Course In: S31° 03' 22"W

Course Out: N89° 43' 26"E

RP North: 2,153,996.9439'

East: 6,360,665.8210'

End North: 2,153,997.0644'

East: 6,360,690.8207'

Segment# 11: Line

Course: S0° 16' 34"E

Length: 22.34'

North: 2,153,974.7246'

East: 6,360,690.9283'

Segment# 12: Line

Course: N89° 41' 18"W

Length: 2,360.78'

North: 2,153,987.5663'

East: 6,358,330.1833'

Segment# 13: Line

Course: N0° 00' 47"W

Length: 1,229.84'

North: 2,155,217.4063'

East: 6,358,329.9030'

Segment# 14: Line

Course: N47° 13' 05"E

Length: 108.98'

North: 2,155,291.4266'

East: 6,358,409.8882'

Segment# 15: Line

Course: N89° 59' 13"E

Length: 121.00'

North: 2,155,291.4541'

East: 6,358,530.8882'

Segment# 16: Line

Course: N0° 00' 47"W

Length: 225.09'

North: 2,155,516.5441'

East: 6,358,530.8369'

Perimeter: 7,458.51'

Area: 3,313,286Sq.Ft.

Error Closure: 0.0114

Course: S28° 26' 49"W

Error North : -0.01005

East: -0.00544

Precision 1: 654,254.39

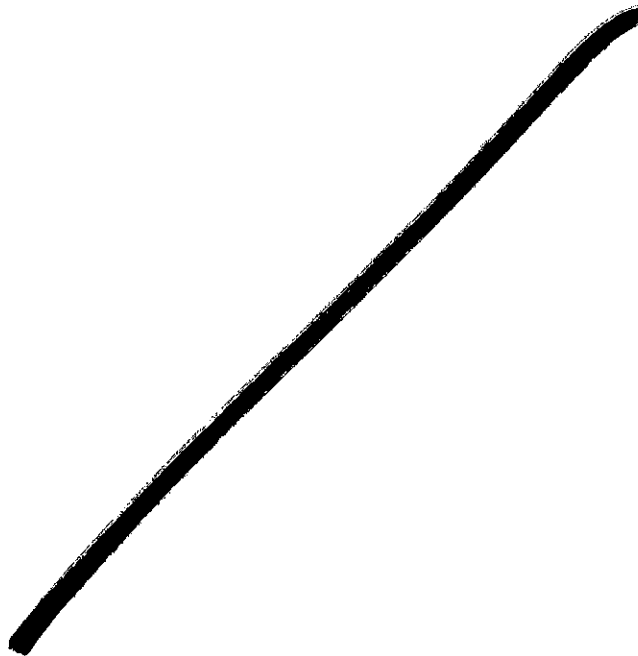


EXHIBIT "A" LEGAL DESCRIPTION
PARCEL 3, PARCEL MAP COS 20-01

ALL THAT CERTAIN REAL PROPERTY SITUATE IN THE UNINCORPORATED AREA OF SAN JOAQUIN COUNTY, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

BEING A PORTION OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 7 EAST, MOUNT DIABLO BASE AND MERIDIAN AND BEING DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTH QUARTER CORNER OF SAID SECTION 27 (T1N, R7E), SAID POINT ALSO BEING THE NORTHWESTERLY CORNER OF THE PARCEL OF LAND DESCRIBED IN THAT CERTAIN GRANT DEED TO ANTHONY A. SANCHEZ AND STEVEN A. SANCHEZ, CO-TRUSTEES UNDER THE WILL OF ROBERTA SANCHEZ, TRUST B, RECORDED MAY 18, 2018, AS DOCUMENT NO. 2018-055198, SAN JOAQUIN COUNTY RECORDS;

THENCE ALONG THE NORTHERLY LINE OF SAID SANCHEZ TRUST PARCEL AND THE NORTHERLY LINE OF SECTION 27, SOUTH 89° 58' 14" EAST, 447.06 FEET;

THENCE LEAVING SAID LINE, SOUTH 00° 00' 47" EAST, 225.09 FEET

THENCE SOUTH 89° 59' 13" WEST, 121.00 FEET;

THENCE SOUTH 47° 13' 05" WEST, 108.98 FEET;

THENCE SOUTH 00° 00' 47" EAST, 1229.84 FEET;

THENCE NORTH 89° 41' 18" WEST, 18.85 FEET;

THENCE NORTH 56° 19' 54" WEST, 205.48 FEET;


THENCE NORTH 89° 43' 57" WEST, 49.94 FEET, TO A POINT ON THE WESTERLY LINE OF HEREINABOVE DESCRIBED DEED (2018-055198 OR);

THENCE ALONG SAID WESTERLY LINE, NORTH 00° 16' 03" WEST, 1415.44 FEET, TO THE **POINT OF BEGINNING.**

CONTAINING 403,880 SQUARE FEET OR 9.2718 ACRES, MORE OR LESS.

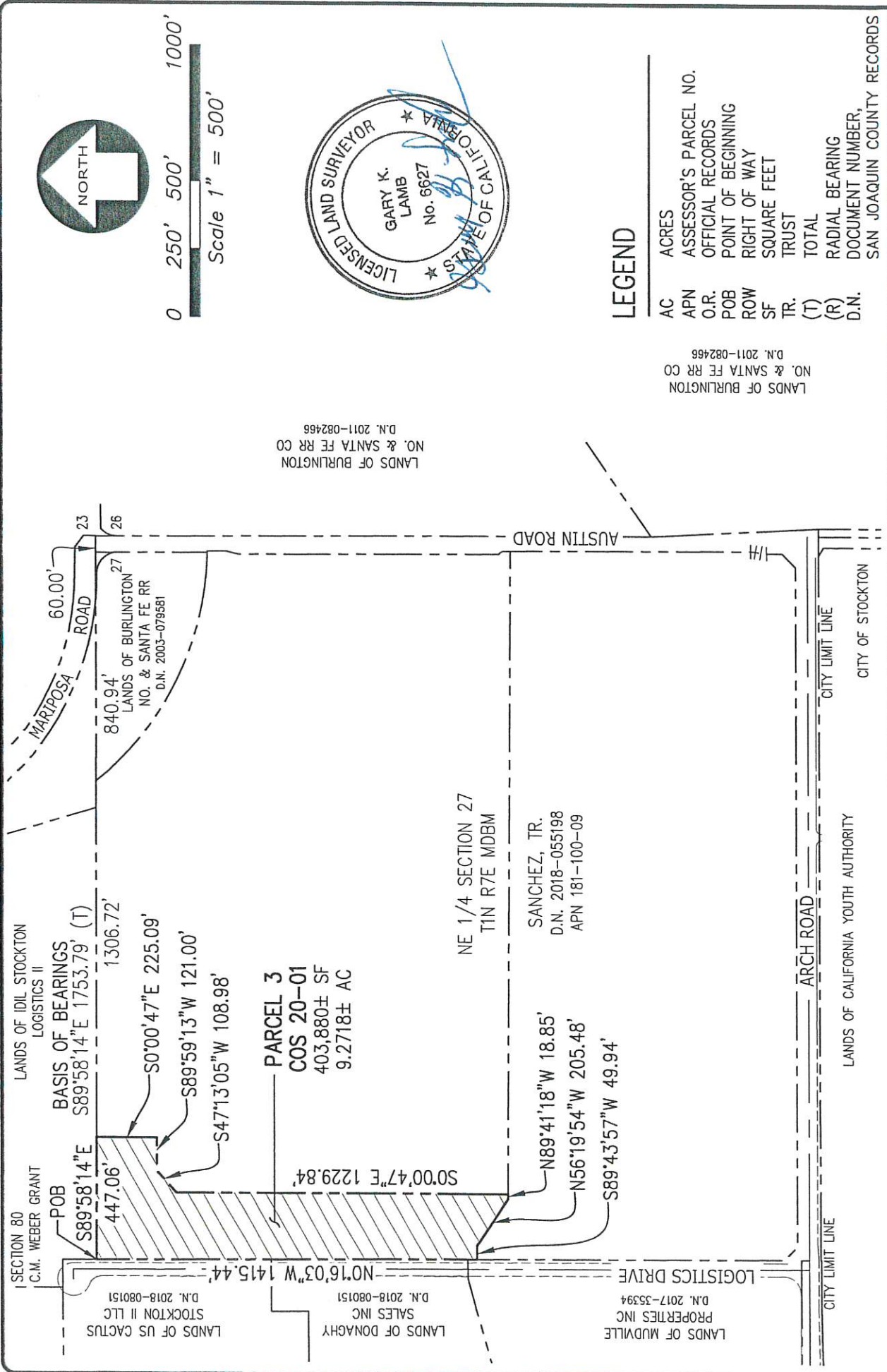
EXHIBIT "B" A PLAT IS ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

KIER & WRIGHT CIVIL ENGINEERS & SURVEYORS, INC.


GARY K. LAMB, P.L.S. 6627

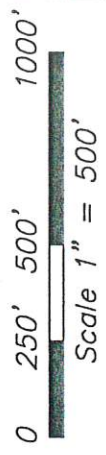
8-26-20
DATE





LANDS OF BURLINGTON NO. & SANTA FE RR CO
 D.N. 2011-082466

LANDS OF BURLINGTON NO. & SANTA FE RR CO
 D.N. 2011-082466



LEGEND

AC	ACRES
APN	ASSESSOR'S PARCEL NO.
O.R.	OFFICIAL RECORDS
POB	POINT OF BEGINNING
ROW	RIGHT OF WAY
SF	SQUARE FEET
TR.	TRUST
(T)	TOTAL
(R)	RADIAL BEARING
D.N.	DOCUMENT NUMBER, SAN JOAQUIN COUNTY RECORDS

DATE	AUGUST, 2020
SCALE	1" = 500'
BY	GKL
JOB NO.	A07567-119
SHEET	1 OF 1

EXHIBIT "B"
PARCEL 3, COS 20-01

SAN JOAQUIN COUNTY

KIER+WRIGHT

250 Cherry Lane, Suite 107, 208 Manteca, CA 95337
 Phone: (209) 328-1123
 www.kierwright.com

Parcel Map Check Report

Client:

Client
Client Company
Address 1

Prepared by:

Preparer
Your Company Name
123 Main Street

Date: 8/26/2020 11:40:07 AM

Parcel Name: BNDRY-LOT - A07567-119-CR PARCEL 3 COS 20-01

Description:

Process segment order counterclockwise: False

Enable mapcheck across chord: False

North: 2,154,793.7332' East: 6,358,901.2371'

Segment# 1: Line

Course: S89° 58' 14"E Length: 447.06'
North: 2,154,793.5034' East: 6,359,348.2970'

Segment# 2: Line

Course: S0° 00' 47"E Length: 225.09'
North: 2,154,568.4134' East: 6,359,348.3483'

Segment# 3: Line

Course: S89° 59' 13"W Length: 121.00'
North: 2,154,568.3859' East: 6,359,227.3483'

Segment# 4: Line

Course: S47° 13' 05"W Length: 108.98'
North: 2,154,494.3656' East: 6,359,147.3631'

Segment# 5: Line

Course: S0° 00' 47"E Length: 1,229.84'
North: 2,153,264.5256' East: 6,359,147.6433'

Segment# 6: Line

Course: N89° 41' 18"W Length: 18.85'
North: 2,153,264.6281' East: 6,359,128.7936'

Segment# 7: Line

Course: N56° 19' 54"W Length: 205.48'
North: 2,153,378.5431' East: 6,358,957.7807'

Segment# 8: Line

Course: S89° 43' 57"W Length: 49.94'

North: 2,153,378.3099'

East: 6,358,907.8412'

Segment# 9: Line

Course: N0° 16' 03"W

Length: 1,415.44'

North: 2,154,793.7345'

East: 6,358,901.2329'

Perimeter: 3,821.70'

Area: 403,880Sq.Ft.

Error Closure: 0.0044

Course: N72° 40' 52"W

Error North : 0.00130

East: -0.00416

Precision 1: 868,563.64

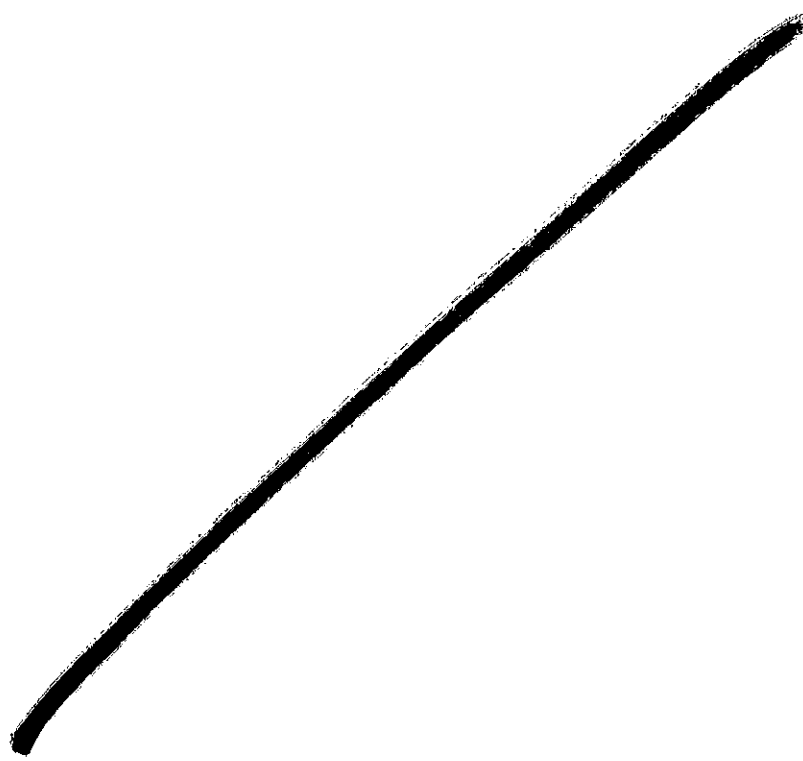
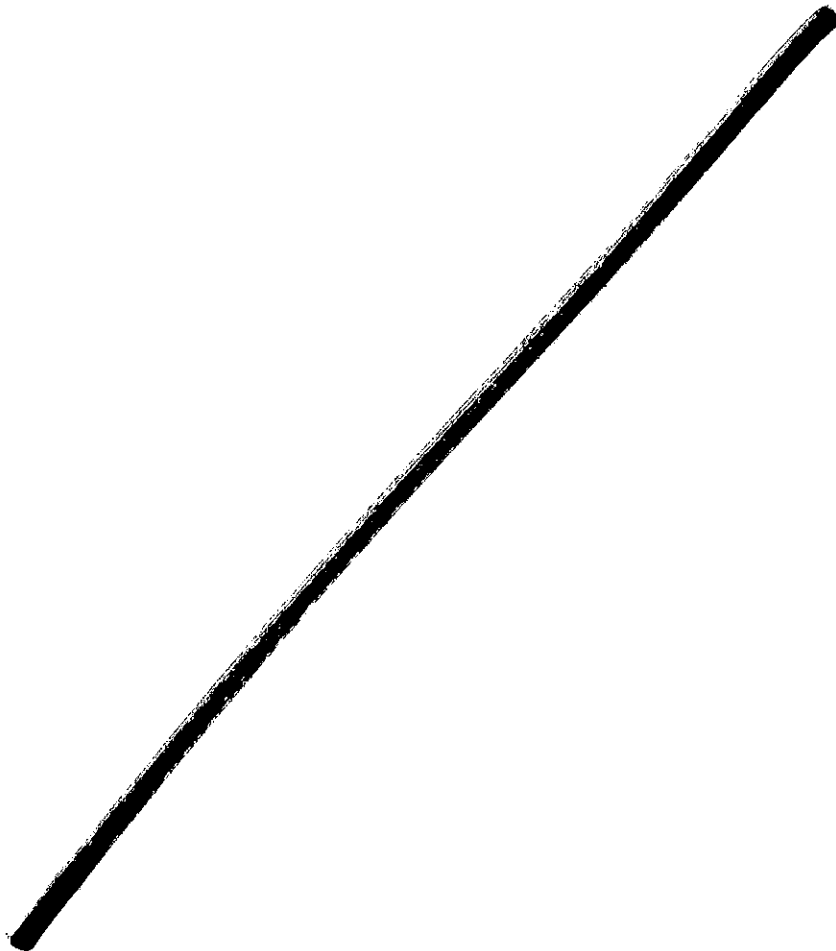


EXHIBIT B

(Operation & Maintenance Plan)



Stormwater Treatment Device Operation and Maintenance Plan

For

Project Sanchez

**6001 Austin Road
Stockton, CA 95215**

Date Revised: December 16, 2020

Prepared For:

ET Stockton Owner, LLC c/o CT Realty

Attn: James G. Koman, Manager
120 S. Central Avenue, Suite 300
St. Louis, MO 63105
(314) 261-7348

Prepared By:



KIER+WRIGHT

2850 Collier Canyon Rd.
Livermore, CA 94551
Phone 925.245.8788

Stormwater Treatment Device Operation and Maintenance Plan

for

6001 Austin Road
Stockton, CA 95215

Date: December 16, 2020
Project Manager: Adam Mahoney, P.E., P.L.S.
Associate
Project Engineer: Leo Sum
Job Number: A07567-117



12/20/2020

Prepared By:

Adam Mahoney, P.E., P.L.S.
Kier & Wright

Date

Contents

Contents	3
1. Project Description.....	4
1.1 Property Owner.....	4
1.2 Site Map	4
1.3 Treatment Description and Maintenance Plan	4
1.4 Site Inspection	7
1.5 Housekeeping.....	10
1.6 Spill Plan.....	11
1.7 Training.....	13
1.8 Facility Changes	14
1.9 Revisions to Pollution Mitigation Measures.....	14
1.10 Monitoring & Reporting Program	14
2. Attachments.....	14

1. Project Description

1.1 PROPERTY OWNER

Project Address: 6001 Austin Road
Stockton, CA 95215
APN 181-100-090-000

Property Owner: ET Stockton Owner, LLC c/o CT Realty
120 S. Central Avenue, Ste. 300
St. Louis, MO 63105
(314) 261-7348

Party Responsible for Operations and Maintenance: ET Stockton Owner, LLC c/o CT Realty
Attn: James G. Koman
120 S. Central Avenue, Ste. 300
St. Louis, MO 63105
(314) 261-7348

ET Stockton Owner, LLC c/o CT Realty is the property owner and is also responsible for the operations and maintenance of the stormwater treatment devices herein.

1.2 SITE MAP

Please see the attached Site Map showing the following:

- Boundary of site
- Acreage of developed area
- Drainage patterns (contours) of the proposed conditions
- Discharge locations to the existing storm drain system
- Landscape and hardscape areas
- Existing and proposed storm drain facilities
- Private sewer lines
- Grade breaks
- Expected sources of pollution generation
- Stormwater Control Measures
- Downstream Receiving Water Body = Mormon Slough – San Joaquin River

1.3 TREATMENT DESCRIPTION AND MAINTENANCE PLAN

The property contains thirty-one (31) high performance modular biofiltration systems located as described below and as shown in the attached site plan. A bioretention area is a vegetated shallow depression that is designed to receive, retain, and infiltrate rainwater runoff from downspouts, piped inlets, or sheet flow from adjoining paved areas. Bioretention areas function as a volume reduction measure but also are considered treatment control measures. They are designed pursuant to the SWQCCP guidance.

Bioretention Area 1 (BRA-1) is located at the north side of the building within the end cap of the parking stall.

Bioretention Area 2 (BRA-2) is located near the northeast side of the building, next to the parking lot cul de sac.

Bioretention Area 3 (BRA-3) is located on the north side of the property, on the endcap of the first drive aisle from the entrance off of Private Drive.

Bioretention Area 4 (BRA-4) is located on the north side of the property, on the endcap between the 3rd and 4th drive aisle from the entrance off Private Drive.

Bioretention Area 5 (BRA-5) is located on the north side of the property, on the endcap between the 5th and 6th drive aisle from the entrance off Private Drive.

Bioretention Area 6 (BRA-6) is located on the north side of the property, on the endcap between the 7th and 8th drive aisle from the entrance off Private Drive.

Bioretention Area 7 (BRA-7) is located near the northeast corner of the property, on the last endcap of the drive aisle running vertical on the northside of the property.

Bioretention Area 8 (BRA-8) is located near the northeast corner of the parking lot, on the northern most drive aisle running horizontal.

Bioretention Area 9 (BRA-9) is located in the parking lot that runs along Austin Road, in the landscape area near the entrance/exit located near the northeast corner of the property.

Bioretention Area 10 (BRA-10) is located in the parking lot that runs along Austin Road, in the endcap between the 2nd and 3rd drive aisle south of the entrance/exit located near the north east corner of the property and is west of BRA 11.

Bioretention Area 11 (BRA-11) is located in the parking lot that runs along Austin Road, in the endcap between the 2nd and 3rd drive aisle south of the entrance/exit located near the north east corner of the property and is east of BRA 10.

Bioretention Area 12 (BRA-12) is located in the parking lot that runs along Austin Road, in the endcap between the 4th and 5th drive aisle south of the entrance/exit located near the north east corner of the property and is west of BRA 13.

Bioretention Area 13 (BRA-13) is located in the parking lot that runs along Austin Road, in the endcap between the 4th and 5th drive aisle south of the entrance/exit located near the north east corner of the property and is east of BRA 12.

Bioretention Area 14 (BRA-14) is located in the parking lot that runs along Austin Road, in the endcap between the 4th and 5th drive aisle north of the entrance/exit located near the southwest corner of the property and west of the endcap that holds BRA 15.

Bioretention Area 15 (BRA-15) is located in the parking lot that runs along Austin Road, in the endcap between the 4th and 5th drive aisle north of the entrance/exit located near the southwest corner of the property and east of the endcap that holds BRA 14.

Bioretention Area 16 (BRA-16) is located on the east side of the property in parking lot that runs along Austin Road, in the endcap between the 2nd and 3rd drive aisle north of the entrance/exit located near the southwest corner of the property and west of the endcap that holds BRA 17.

Bioretention Area 17 (BRA-17) is located on the east side of the property in parking lot that runs along Austin Road, in the endcap between the 2nd and 3rd drive aisle and east of the endcap that holds BRA 16.

Bioretention Area 18 (BRA-18) is located near the southeast corner of the property, along the shoulder before the first drive aisle.

Bioretention Area 19 (BRA-19) is located near the southeast end of the property near the rounded dead end of this parking lot.

Bioretention Area 20 (BRA-20) is located on the south side of the property, prior to the entrance to the parking lot from Austin Road (entrance only location).

Bioretention Area 21 (BRA-21) is located on the south side of the property, after the entrance to the parking lot from Austin Road (entrance only location).

Bioretention Area 22 (BRA-22) is located on the south side of the property, end the endcap across from BRA 21.

Bioretention Area 23 (BRA-23) is located on the southwest corner of the property.

Bioretention Area 24 (BRA-24) is located in the west side of the property, perpendicular to Logistics Drive.

Bioretention Area 25 (BRA-25) is located on the west side of the building.

Bioretention Area 26 (BRA-26) is located on the west side of the property, near the northwest corner of the property.

Bioretention Area 27 (BRA-27) is located on west side of the property, near the northwest corner of the building.

Bioretention Area 28 (BRA-28) is located on the northwest corner of the property.

Bioretention Area 29 (BRA-29) is located north side of the property is the landscape area on the west side of the exit lane to Private Drive.

Bioretention Area 30 (BRA-30) is located north side of the property is the landscape area on the east side of the exit lane to Private Drive.

Bioretention Area 31 (BRA-31) is located on the north side of the property on the last endcap before BRA 30.

Routine Maintenance Activities for Bioretention Planters		
No.	Maintenance Activity	Frequency
1	Remulch void areas and remove sediment	As needed
2	Treat diseased trees and shrubs	As needed
3	Water plants daily for two weeks	At project completion
4	Inspect soil and repair eroded areas	Monthly
5	Remove litter and debris	Monthly
6	Remove and replace dead and diseased vegetation	Twice per year
7	Add additional mulch	Once per year
8	Replace tree stakes and wire	Once per year

1.4 SITE INSPECTION

Inspection Schedule		
No.	Inspection Activity	Frequency
1	Inspect soil and repair eroded areas	Monthly
2	Inspect for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the planters are ready for winter. However, additional inspections after periods of heavy runoff is desirable.	Semi-annually
3	Check for debris and litter, and areas of sediment accumulation	Semi-annually
4	Inspect health of trees and shrubs	Semi-annually
5	Replace tree stakes and wire	Once per year
6	Inspect bubbler outlet and drain inlets for sediment buildup prior to the first rain event and periodically throughout the rainy season to ensure proper function of the storm drain system. Clear out any obstructions.	Semi-annually
7	Inspect storm drain for standing water after the first rain event and after major fall runoff. Standing water shall not remain in the treatment measures for more than five days, to prevent mosquito generation. Should any mosquito issues arise, contact the San Joaquin County Mosquito & Vector Control District (SJC MVCD) as needed for assistance. Mosquito larvicides shall be applied only when absolutely necessary, as indicated by the SJC MVCD and then only by a licensed professional or contractor. Contact information: Phone: 209-982-4675 Address: 7759 S. Airport Way, Stockton, CA 95206 Email: district@sjmosquito.org	Semi-annually

Further inspection and maintenance activities which shall be completed as needed are:

1. Perform annual testing of any mechanical or electrical devices prior to wet weather.
2. Report any significant changes in stormwater control measures to the site management. As appropriate, assure mechanical devices are working properly and/or landscaped BMP plantings are irrigated and nurtured to promote their growth.
3. Note any significant maintenance requirements due to spills or unexpected discharges.
4. As appropriate, perform maintenance and replacements as scheduled and as needed in a timely manner to assure stormwater control measures are performing as designed and approved.
5. Assure unauthorized low-flow discharges from the property do not by-pass stormwater control measures.
6. Perform an annual assessment of each pollution generation operation and its associated stormwater control measures to determine if any part of the pollution reduction train can be improved.

The owner of the property is responsible for documenting and retaining records of all inspection activities per standards set forth in the SWQCCP. Records of inspections shall be kept in storage in a binder or folder and retained for at least 3 years from date of inspection.

The owner is also responsible providing the necessary funding for operation, inspection, routine maintenance and upkeep of stormwater control measures.

The property contains one (1) detention basin located as described below and as shown in the attached site plan. A detention basin is a basin whose outlets have been designed to detain the stormwater runoff from a water quality design storm for a minimum of 48 hours to allow particles and associated pollutants to settle. They are designed pursuant to the SWQCCP guidance.

Detention Basin 1 (DB 1) is located to the westside of the property and runs vertically from Private Drive, all the way south to Weber Slough. The detention basin has a 5 acre-feet retention area, with volumes greater than 5 acre-feet released via pump station. See below for pump station maintenance and details.

Routine Maintenance Activities for Detention Basin		
No.	Maintenance Activity	Frequency
1	Conduct annual vegetation management during the summer, removing weeds and harvesting vegetation. Remove all grass cuttings and other green waste.	Once a year
2	Trim vegetation at beginning and end of wet season to prevent establishment of woody vegetation, and for aesthetics and mosquito control.	Twice a year (spring and fall)
3	Evaluate health of vegetation and remove and replace any dead or dying plants. Remove all green waste and dispose of properly.	Twice a year

4	If turf grass is included in basin design, conduct regular mowing and remove all grass cuttings. Avoid producing ruts when mowing.	As needed
5	Remove sediment from forebay when the sediment level reaches the level shown on the fixed vertical sediment marker and dispose of sediment properly.	As needed
6	Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of basin volume and dispose of sediment properly.	Every 10 years, or as needed
7	Remove accumulated trash and debris from the detention basin at the middle and end of the wet season and dispose of trash and debris properly.	Twice a year (January and April)
8	Irrigate during dry weather.	As needed
9	Inspect detention basin using the attached inspection checklist.	Quarterly, or as needed
10	Survey the basin bottom and remove sediment when the depth reaches one foot over the designed basin floor elevation. This maintenance is required for the basin to perform correctly.	Every 2 years, or as needed

1.5 SITE INSPECTION

Inspection Schedule		
No.	Inspection Activity	Frequency
1	Inspect the outlet, embankments, dikes, berms, and side slopes for structural integrity and signs of erosion.	Semi-annually
2	Examine outlets and overflow structures and remove any debris plugging the outlets. Identify and minimize any sources of sediment and debris. Check rocks or other erosion control and replace, if necessary	Semi-annually
3	Check inlets to make sure piping is intact and not plugged. Remove accumulated sediment and debris near the inlet.	Semi-annually
4	Check for slope stability and the presence of rodent burrows. Fill in any holes detected in the side slopes	Semi-annually
	Inspect for and remove any trash and debris.	Semi-annually
	Confirm that any fences around the facility are secure.	Semi-annually
5	Replace tree stakes and wire	Semi-annually
6	Check for sediment accumulation.	Semi-annually
7	Inspect storm drain for standing water after the first rain event and after major fall runoff. Standing water shall not remain in the treatment measures for more than five days, to prevent mosquito generation. Should any mosquito issues arise, contact the San Joaquin County Mosquito & Vector Control District (SJC MVCD) as needed for assistance. Mosquito larvicides shall be applied only when absolutely necessary, as indicated by the SJC MVCD and then only by a licensed professional or contractor. Contact information: Phone: 209-982-4675	Semi-annually

	Address: 7759 S. Airport Way, Stockton, CA 95206 Email: district@sjmosquito.org	
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Further inspection and maintenance activities which shall be completed as needed are:

(For Guidelines, See Section 1.4 Above)

The property contains one (1) pump station for the detention basin located as described below and as shown in the attached site plan. A pump station is a holding chamber that pumps liquids to a required area.

Pump Station 1 (PS 1) is located at the south end of the basin on the west side of the property.

Routine Maintenance Activities for Pump Station		
No.	Maintenance Activity	Frequency
1	Inspect and repair eroded areas	Monthly
2a	Remove litter and debris around inlet structure at basin	Weekly, or as needed
2b	Remove litter and debris at trash screens within pump station, at discharge location	Weekly, or as needed
2c	Remove litter and debris at outfall to Weber Slough	Weekly, or as needed
3	Inspect detention basin using the attached inspection checklist.	Quarterly, or as needed

1.6 SITE INSPECTION

Inspection Schedule		
No.	Inspection Activity	Frequency
1	Examine inlets draining to pump station and pump station manhole for debris prior to rainy season.	As Needed
2	Check pump station electrical equipment to verify there are no warning prior to rainy season.	As Needed
3	Check pump inlet to verify no debris are located in the suction inlet of the pump.	As Needed
4	Complete oil changes and inspections on pump as required by manufacturer.	As Needed
5	Check pump manhole for large amounts of standing water to confirm pump has been functioning properly.	After the first rain event of the season that produces runoff.
6	Check force main discharge for debris.	Prior to rainy season

Further inspection and maintenance activities which shall be completed as needed are:

(For Guidelines, See Section 1.4 Above)

1.7 HOUSEKEEPING

Site Maintenance Schedule		
No.	Inspection Activity	Frequency
1	Store hazardous materials and wastes in covered containers and protect from vandalism.	As needed
2	Place a stockpile of cleanup materials where it will be readily accessible.	As needed
3	Train employees in spill prevention and cleanup.	As needed
4	Designate responsible individuals to oversee and enforce control measures.	As needed
5	Sweep hardscape clean of sediment or refuse. Dispose to refuse in trash containers located on the adjacent site.	Monthly
6	Keep trash enclosure picked up with all material properly stored in designated containers and protected from spills. Check sand oil separator and clean as required.	Monthly

In order to prohibit illicit discharges or potential illicit discharges to the storm drain, area is to be swept on a monthly basis and refuse is to be disposed of in receptacles located on the adjacent property to the east.

Equipment needed for maintenance includes but is not limited to:

- Shovel
- Broom
- Planting media
- Gravel
- Vegetation (as needed)
- Absorbent inert material

1.8 SPILL PLAN

In the event of a spill on impervious ground, spilled material shall be isolated, captured using absorbent inert material, and removed immediately. Should any material enter planter, contaminated media shall be removed and replaced. Contaminated soil/material shall be disposed of according to state and city regulations. For instructions to follow in the case of a spill, refer to BMP WM-04 per CASQA standards. Weber Slough may be affected by spills or chronic untreated discharges if they occur because it is the downstream receiving body of water for this project.

In the case of a spill contact call 911. The Owner is responsible for following the spill procedures as provided in this report. In addition to calling emergency services, please contact:

Stockton Municipal Utilities Department: Stormwater Program
Phone: 209-937-8155
2500 Navy Drive
Stockton, CA 95206

Site maintenance contact in the event of an emergency:

ET Stockton Owner, LLC c/o CT Realty
Attn: James G. Koman
120 S. Central Avenue, Ste. 300
St. Louis, MO 63105
(314) 261-7348

For additional contact information in the case of spills refer to CASQA BMP WM-4.

Emergency sampling of contaminated runoff shall take place as needed when spills occur. Sampling location(s) shall be chosen as appropriate for the spill based on size and location. In the event of a spill the site user shall choose an appropriate laboratory in which to test runoff samples. To collect a sample:

- Dip the sample bottle facing upstream until full

Immediately following sample collection:

- Cap sample container(s)
- Complete sample container labels
- Seal container(s) in a re-sealable storage bag
- Place sample containers into an ice-chilled cooler, all samples should be maintained at 0-6 degrees Celsius during delivery to laboratory
- Document sample information

In order to maintain sample integrity and prevent cross-contamination, sample collection personnel shall follow the protocols:

- Collect sample only in analytical laboratory-provided sample containers.
- Wear clean, powder-free nitrile gloves when collecting samples.
- Change gloves whenever something not known to be clean has been touched.
- Change gloves between sites.
- Decontaminate all equipment prior to sample collection using a trisodium phosphate water wash, distilled water rinse, and final rinse with distilled water. Do not decontaminate laboratory provided sample containers.
- Do not smoke during sampling events.
- Never sample near a running vehicle.
- Do not eat or drink during sample collection.
- Do not breathe, sneeze, or cough in the direction of an open sample container.

In general, in case of a spill,

1. Clean up leaks and spills immediately.

2. Use a rag for smaller spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry or disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

In case of a spill small enough to be contained by the first responder:

1. Contain the spread of the spill
2. Recover spilled materials
3. Clean the contaminated area and properly dispose of contaminated materials

In case of a semi-significant spill that that can be controlled by the first responder with the aid of other onsite personnel:

1. Contain the spread of the spill
2. Notify the foreman/manager
3. If the spill occurs on hardscape, clean up using absorbent materials. Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating run-off.

In case of a significant/hazardous large-scale spill that cannot be controlled by personnel in the immediate vicinity immediately notify emergency response by dialing 911 and see the CASQA BMP WM-4 section on Significant/Hazardous spills for further contact information.

In all cases of spills greater than the first level of severity, notify the Stockton Stormwater Program using the aforementioned contact information. In the case of a spill which requires more expertise or personnel than is available onsite, contact the Montezuma fire district using the aforementioned contact information.

1.9 TRAINING

The site user shall identify the appropriate staff to be trained. Ideally, staff will consist of full-time or part-time staff, employed by the site user, who will be trained to perform maintenance and inspection activities in addition to their standard responsibilities which pertain to the operation of the site user's business. Training shall include:

1. good housekeeping procedures as defined in this plan
2. proper maintenance procedures of all pollution mitigation devices and cleaning spills
3. identification and cleanup procedures for spills and overflows
4. large-scale spill or hazardous material response
5. safety concerns when maintaining devices and cleaning spills

1.10 FACILITY CHANGES

Operational of facility changes which significantly affect the character or quantity of pollutants discharging into the stormwater control measures will require modifications to the Maintenance Plan and/or additional stormwater control measures.

1.11 REVISIONS TO POLLUTION MITIGATION MEASURES

If future correction or modification of pass stormwater control measures or procedures is required, the owner shall obtain approval from the governing stormwater agency prior to commencing any work. Corrective measures or modifications shall not cause discharges to by-pass or otherwise impede existing stormwater control measures.

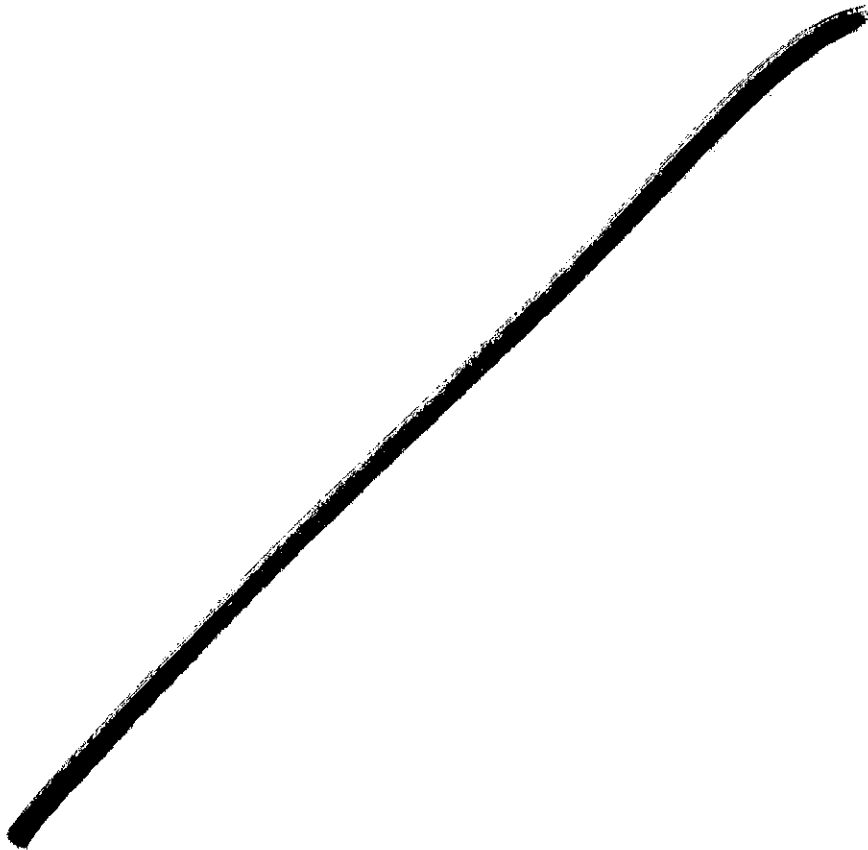
1.12 MONITORING & REPORTING PROGRAM

1. The governing stormwater agency may require a Monitoring & Reporting Program to assure the stormwater control measures approved for the site are performing according to design.
2. If required by local agency, the Maintenance Plan shall include performance testing and reporting protocols.

2. Attachments

Attachment 1	Inspection and Maintenance Checklist
Attachment 2	Site Map
Attachment 3	Storm Water Quality Control Plan
Attachment 4	S-1 Storm Drain Message and Signage
Attachment 5	WM-04 Spill Prevention and Control
Attachment 6	Filterra Operations and Maintenance Manual
Attachment 7	Flygt 3153 Operations and Maintenance Manual

Attachment 1
Inspection and Maintenance Checklist



Bioretention Area No. 1 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-1
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 2 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: EI Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-2
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed; improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 3 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC d/b/a CT Realty

Treatment Measure No.: BRA-3

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season

Date of Inspection: _____ Inspector: Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 4 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-4
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed; improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 5 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-5 Inspection: After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 6 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-6
 Date of Inspection: _____ Inspector: _____
 Type of Monthly Pre-Wet Season
 Inspection: After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 7 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-7

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season

Date of Inspection: _____

Inspector: _____

Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 8 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC d/b/ CT Realty Treatment Measure No.: BRA-8
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 9 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-9

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other _____

Date of Inspection: _____ Inspector: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 10 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner LLC c/o CT Realty

Treatment Measure No.: BRA-10

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Date of Inspection: _____ Inspector: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 12 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-12
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 13 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-13

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Date of Inspection: _____ Inspector: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 14 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-14
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 16 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Type of

Monthly

Pre-Wet Season

Property Owner: EI Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-16

Inspection:

After heavy runoff

End of Wet Season

Date of inspection: _____

Inspector: _____

Other: _____

Defect	Conditions When Maintenance is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 17 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-17 Inspection: After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 18 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-18 Inspector: After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 19 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Inspection: Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-19 After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 20 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-20
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 21 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-21
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed; improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 22 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-22
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 23 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-23
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 24 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-24

Type of Inspection:

Monthly

Pre-Wet Season

After heavy runoff

End of Wet Season

Date of Inspection: _____

Inspector: _____

Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 25 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC c/o CT Realty

Treatment Measure No.: BRA-25

Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Date of Inspection: _____ Inspector: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 26 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-26
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 27 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215

Property Owner: ET Stockton Owner, LLC d/b CT Realty

Treatment Measure No.: BRA-27

Type of Inspection:

Monthly

Pre-Wet Season

After heavy runoff

End of Wet Season

Date of Inspection: _____

Inspector: _____

Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed; improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets; there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 28 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC d/b CT Realty Treatment Measure No.: BRA-28
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 29 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-29
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 30 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-30
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Bioretention Area No. 31 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: BRA-31
 Date of Inspection: _____ Inspector: _____
 Type of Inspection: Monthly Pre-Wet Season
 After heavy runoff End of Wet Season
 Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Corrective Action/Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash/Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Detention Basin No. 1 Inspection and Maintenance Checklist

Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: _____ Inspection: After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
General				
Trash & Debris	Trash and debris accumulated in basin. Visual evidence of dumping.			Trash and debris cleared from site and disposed of properly.
Poisonous Vegetation and noxious weeds	Poisonous or nuisance vegetation or noxious weeds, e.g., morning glory, English ivy, reed canary grass, Japanese knotweed, purple loosestrife, blackberry, Scotch broom, poison oak, stinging nettles, or devil's club.			Use Integrated Pest Management techniques to control noxious weeds or invasive species.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.			No contaminants or pollutants present.
Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.			The design specifications are not compromised by holes. Any rodent control activities are in accordance with applicable laws and do not affect any protected species.
Insects	Insects such as wasps and hornets interfere with maintenance activities.			Insects do not interfere with maintenance activities.

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Tree/Brush Growth and Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity. Dead, diseased, or dying trees.			Trees do not hinder maintenance activities. Remove hazard trees as approved by the City. (Use a certified Arborist to determine health of tree or removal requirements).
Drainage time	Standing water remains in basin more than four days.			Correct any circumstances that restrict the flow of water from the system. Restore drainage to design condition. If the problem cannot be corrected and problems with standing water recur, then mosquitoes should be controlled with larvicides, applied by a licensed pesticide applicator.
Outfall structure	Debris or silt build-up obstructs an outfall structure.			Remove debris and/or silt build-up and dispose of properly.
Side Slopes				
Erosion	Eroded over 2 in. deep where cause of damage is still present or where there is potential for continued erosion. Any erosion on a compacted berm embankment.			Cause of erosion is managed appropriately. Side slopes or berm are restored to design specifications, as needed.
Storage Area				
Sediment	Accumulated sediment >10% of designed basin depth or affects inletting or outletting condition of the facility.			Sediment cleaned out to designed basin shape and depth; basin reseeded if necessary to control erosion. Sediment disposed of properly.
Liner (if Applicable)	Liner is visible and has more than three 1/4-inch holes in it.			Liner repaired or replaced. Liner is fully covered.
Emergency Overflow/ Spillway and Berms				
Settlement	Berm settlement 4 inches lower than the design elevation.			Dike is built back to the design elevation.

Defect	Conditions When Maintenance is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance is Performed
Tree Growth	Tree growth on berms or emergency spillway >4 ft in height or covering more than 10% of spillway.			Trees should be removed. If root system is small (base less than 4 inches) the root system may be left in place. Otherwise the roots should be removed and the berm restored. A civil engineer should be consulted for proper berm/spillway restoration.
Emergency Overflow/ Spillway	Rock is missing and soil is exposed at top of spillway or outside slope.			Rocks and pad depth are restored to design standards.
Debris Barriers (e.g., Trash Racks)				
Trash and Debris	Trash or debris is plugging openings in the barrier.			Trash or debris is removed and disposed of properly.
Damaged/ Missing Bars	Bars are missing, loose, bent out of shape, or deteriorating due to excessive rust.			Bars are repaired or replaced to allow proper functioning of trash rack.
Inlet/Outlet Pipe	Debris barrier is missing or not attached to pipe.			Debris barrier is repaired or replaced to allow proper functioning of trash rack.
Fencing and Gates				
Missing or broken parts	Any defect in or damage to the fence or gate that permits easy entry to a facility.			Fencing and gate are restored to design specifications.
Deteriorating Paint or Protective Coating	Part or parts that have a rusting or scaling condition that has affected structural adequacy.			Paint or protective coating is sufficient to protect structural adequacy of fence or gate.
Flow Duration Control Outlet (If Included in design to meet Hydromodification Management Standard)				
Risers, orifices and screens	Any debris or clogging			Restore unobstructed flow through discharge structure; to meet original design; dispose of debris properly.
Miscellaneous				
Miscellaneous	Any condition not covered above that needs attention to restore detention basin to design conditions.			Meets the design specifications.

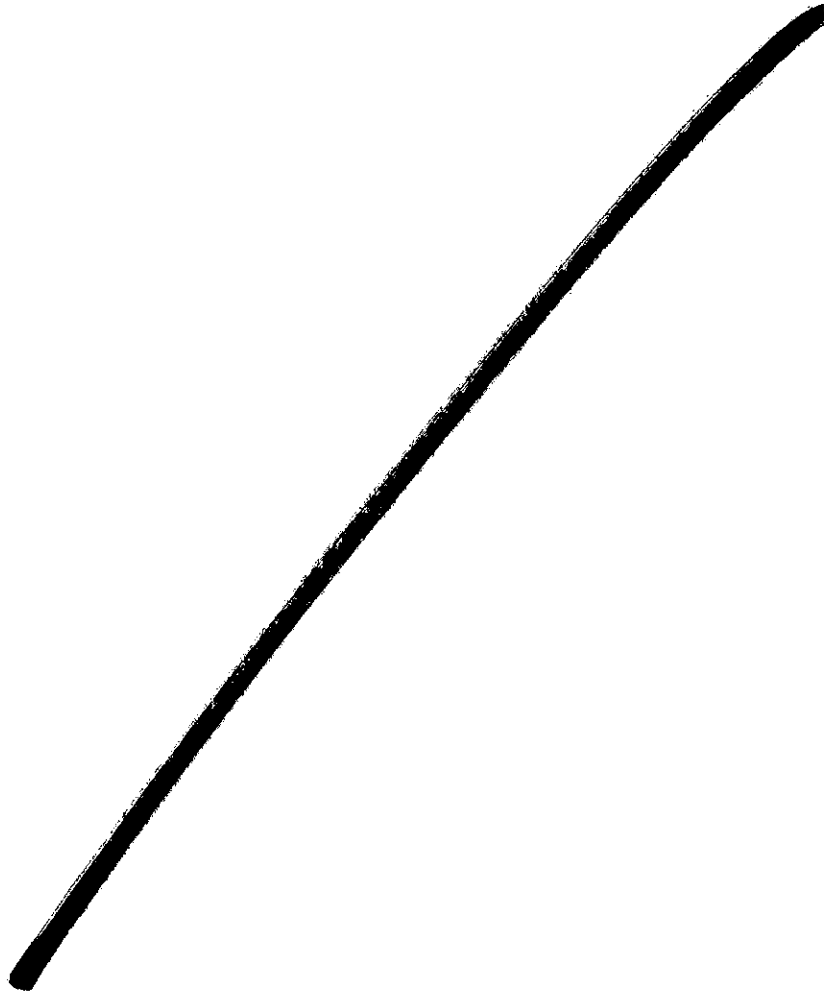
Detention Basin Pump No. 1 Inspection and Maintenance Checklist

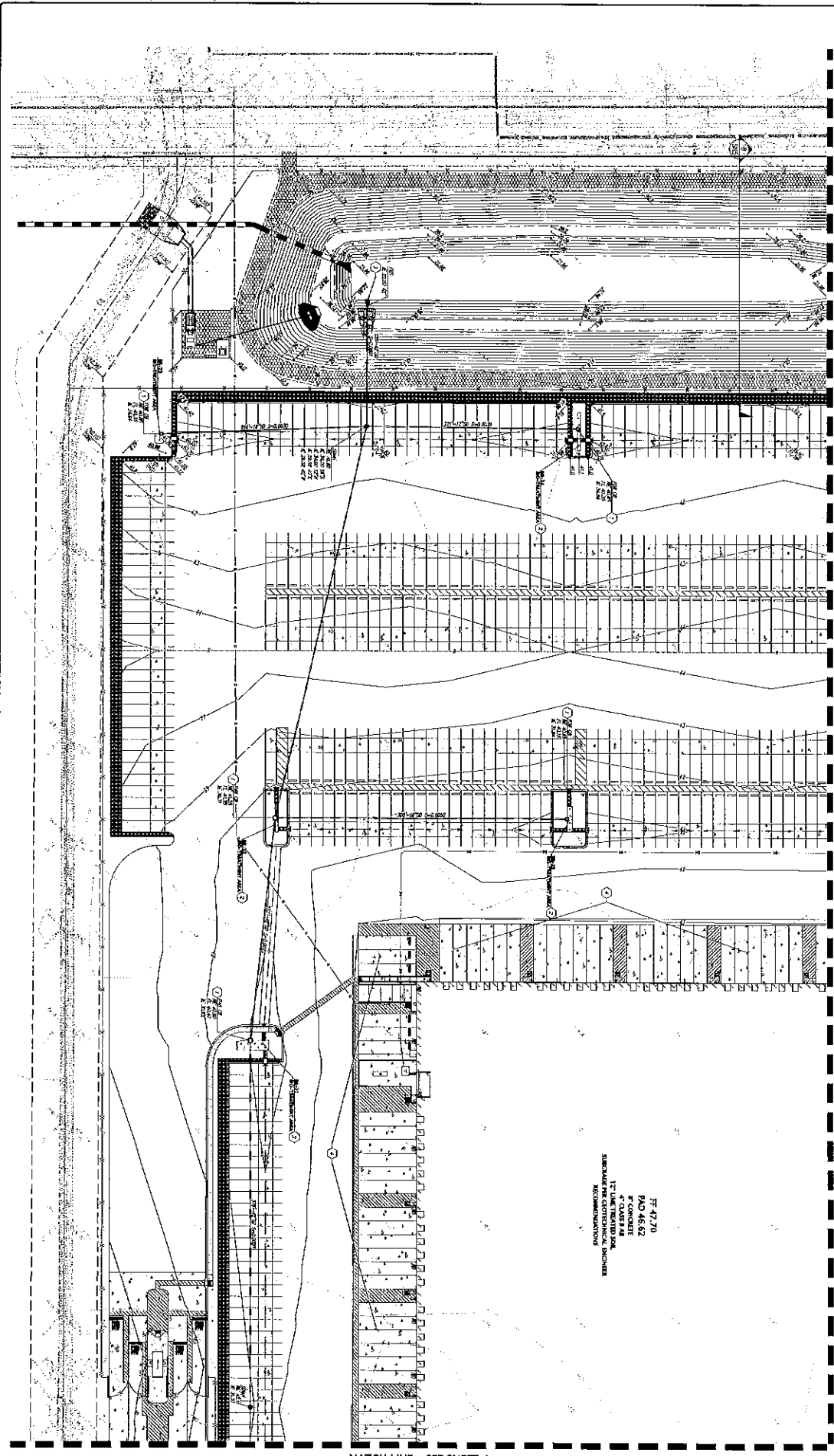
Property Address: 6001 Austin Road, Stockton, CA 95215 Type of Inspection: Monthly Pre-Wet Season
 Property Owner: ET Stockton Owner, LLC c/o CT Realty Treatment Measure No.: _____ After heavy runoff End of Wet Season
 Date of Inspection: _____ Inspector: _____ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Trash & Debris	Trash and debris accumulated in pump.			Trash and debris cleared from site and disposed of properly.
Sediment	Evidence of sedimentation in pump.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
Standing Water	When water stands in the manhole between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed.
Miscellaneous	Any condition not covered above that needs attention to restore detention basin to design conditions.			Meets the design specifications.

Attachment 2

Site Map





SITE MAP KEYNOTES

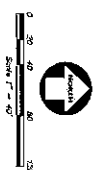
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- 2 1/4" = 1' SCALE
- 3 1/4" = 1' SCALE
- 4 1/4" = 1' SCALE

LEGEND

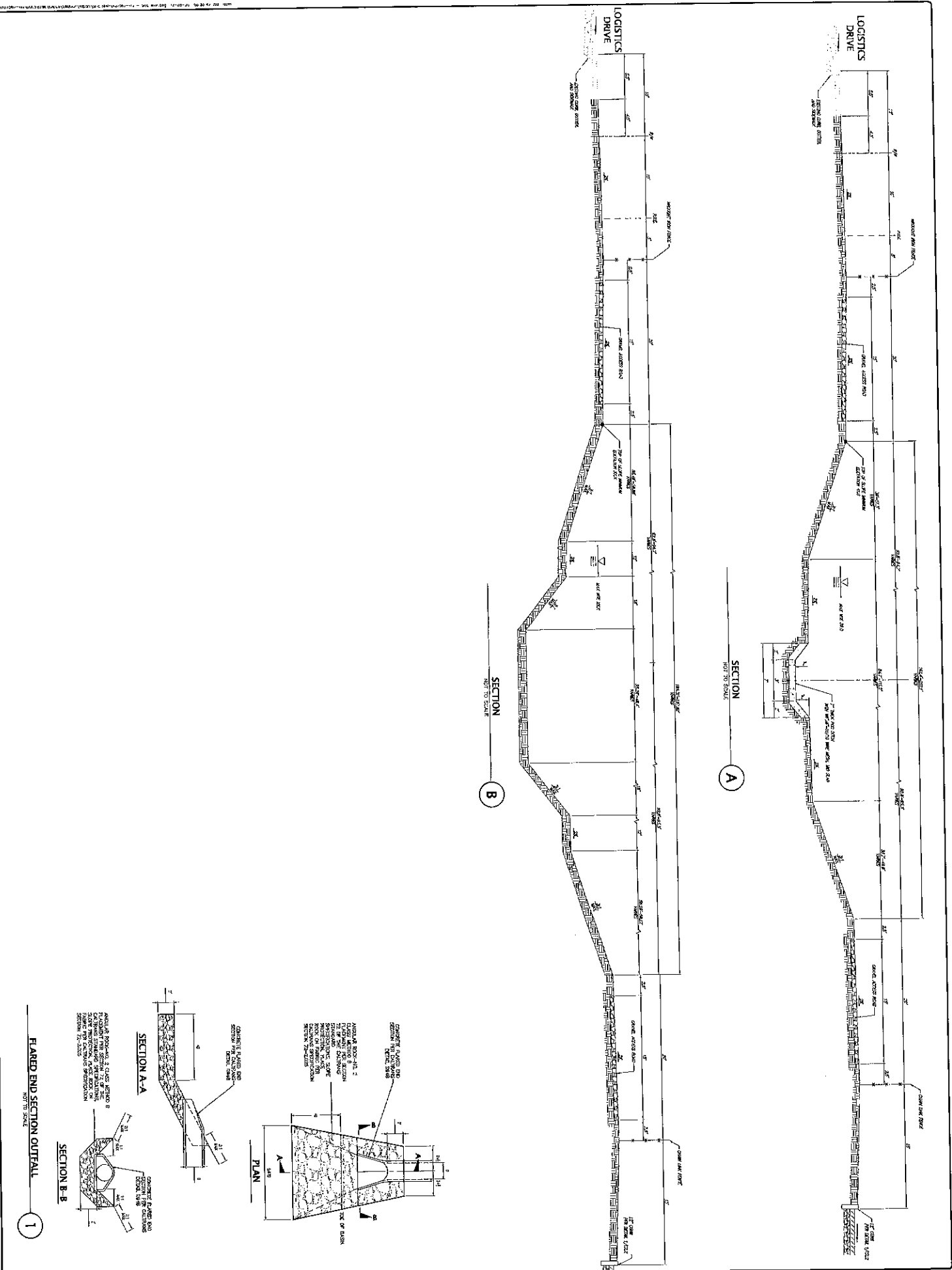
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[Symbol]	EXISTING BUILDING FOOTPRINT
[Symbol]	PROPOSED BUILDING FOOTPRINT
[Symbol]	EXISTING DRIVEWAY
[Symbol]	PROPOSED DRIVEWAY
[Symbol]	EXISTING PARKING SPACE
[Symbol]	PROPOSED PARKING SPACE
[Symbol]	EXISTING SIDEWALK
[Symbol]	PROPOSED SIDEWALK
[Symbol]	EXISTING CURB
[Symbol]	PROPOSED CURB
[Symbol]	EXISTING STREET LIGHT
[Symbol]	PROPOSED STREET LIGHT
[Symbol]	EXISTING UTILITY
[Symbol]	PROPOSED UTILITY
[Symbol]	EXISTING TREE
[Symbol]	PROPOSED TREE
[Symbol]	EXISTING LANDSCAPE
[Symbol]	PROPOSED LANDSCAPE
[Symbol]	EXISTING FENCE
[Symbol]	PROPOSED FENCE
[Symbol]	EXISTING SIGN
[Symbol]	PROPOSED SIGN
[Symbol]	EXISTING WALL
[Symbol]	PROPOSED WALL
[Symbol]	EXISTING GROUND SURFACE
[Symbol]	PROPOSED GROUND SURFACE
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[Symbol]	PROPOSED ELEVATION
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[Symbol]	PROPOSED EASEMENT
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[Symbol]	EXISTING BIKEWAY FURNITURE
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[Symbol]	EXISTING BIKEWAY FURNITURE
[Symbol]	PROPOSED BIKEWAY FURNITURE

FF 47.70
 PAD 46.62
 12" LIME TREATED SOIL
 STIMULATED PER CENTRIFUGAL ENGINEER
 ACCORDANCE WITH

MATCH LINE - SEE SHEET 4



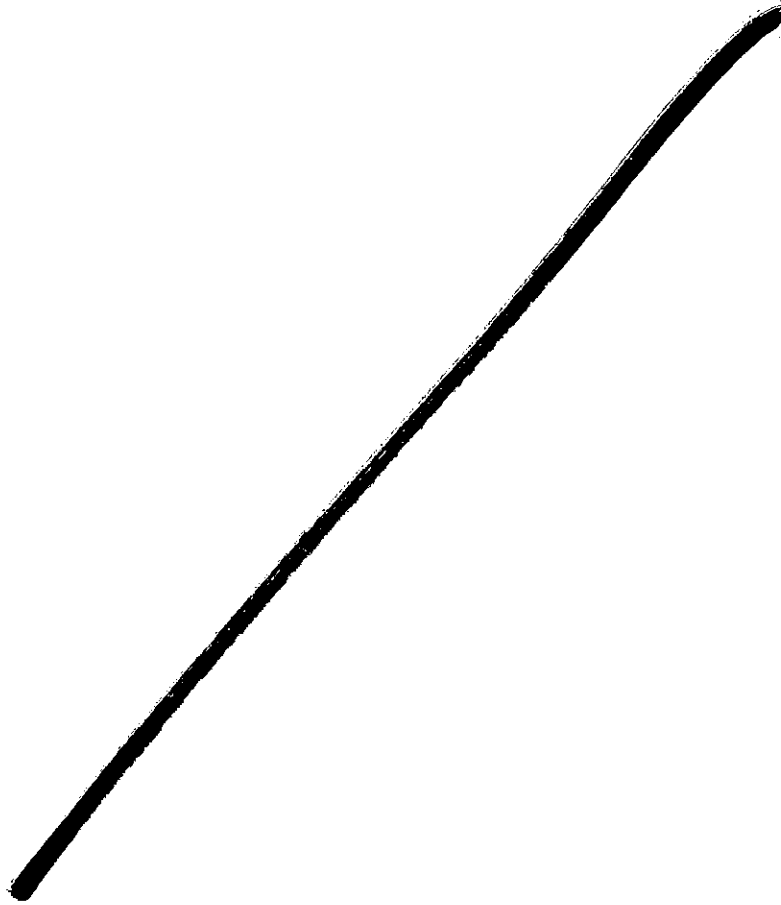
DATE: 08/13/2019 TIME: 10:00 AM DRAWN BY: [Name] CHECKED BY: [Name] SCALE: 1/4" = 1'	SITE MAP OF PROJECT SANCHEZ FOR CT REALTY	 KIER+WRIGHT 2850 Collier Centre Road Livermore, CA 94551 Phone: (925) 245-8788 www.kierwright.com	 REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA No. 12345 Exp. 12/31/2020	REVISION 08.13.2019 - 1ST CITY SUBMITTAL	REVISION 08.13.2019 - 1ST CITY SUBMITTAL
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NO.	REVISION	BY	CHK.	DATE
1				
2				
3				
4				
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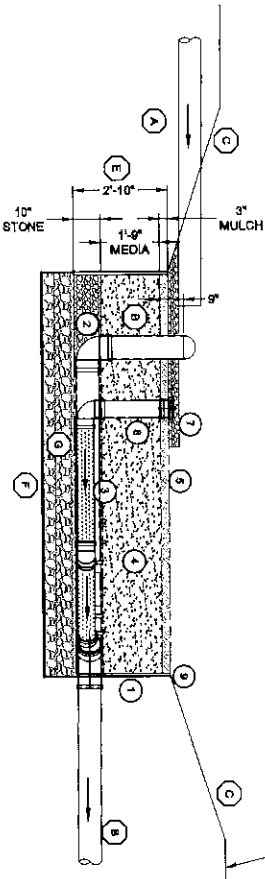
DETAILS OF PROJECT SANCHEZ CT REALTY STOCKTON, CALIFORNIA	KIER+WRIGHT 2810 Colton Canyon Road Livermore, CA 94551 Phone: 925-454-1100 Fax: 925-454-1101 www.kierwright.com	
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Attachment 3
Stormwater Quality Control Plan

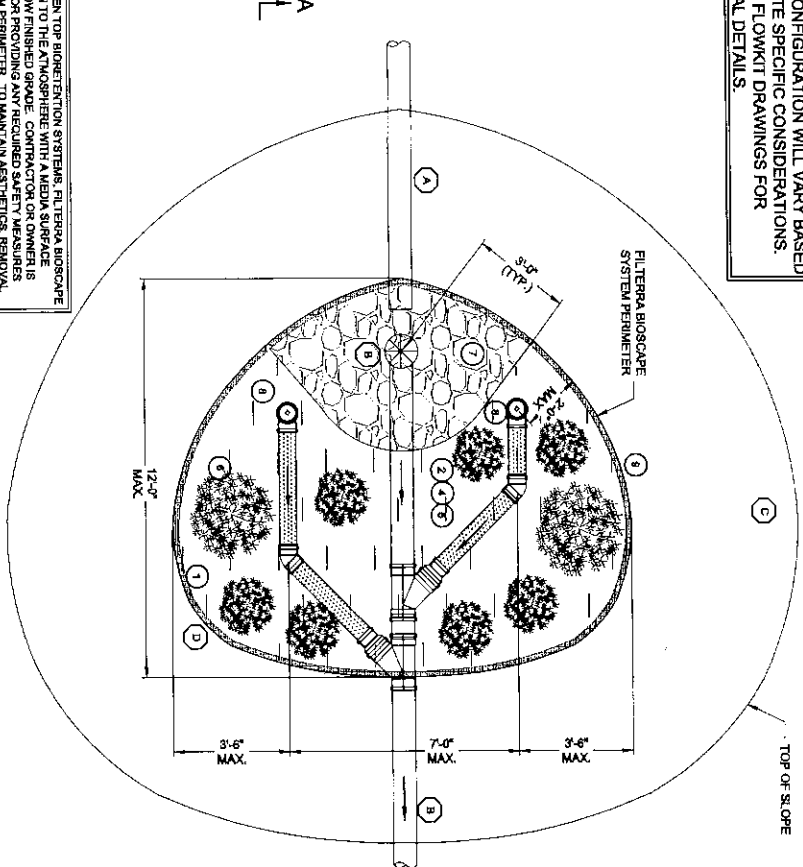


THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.

AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER TO MAINTAIN AESTHETIC REMOVAL OF HEAVY SYSTEM PENETRATION OR IN THE EVENT OF A MAJOR SYSTEM FAILURE. CONTRACTOR SHALL MAINTAIN AND REPAIR ALL FILTERRA BIOSCAPE SYSTEM MAINTENANCE EVENTS.



PLAN VIEW



BILL OF MATERIALS			PLANTING SCHEDULE	
COUNT	DESCRIPTION	INSTALLED BY	NOTE: PLANTS PROVIDED BY OTHERS	
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE	
X	MULCH VOLUME (CY)	CONTRACTOR		
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR		
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR		
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR		
X	EROSION CONTROL (LF)	CONTRACTOR		
X	FILTERRA FLOWKIT	CONTRACTOR		

- GENERAL NOTES:**
- CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF COORDINATION OR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTRACTOR'S REPRESENTATIVE ATTERS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
 - PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
 - USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST OF THE FILTERRA BIOSCAPE SYSTEMS. ACCESS SHALL NOT PROHIBIT LIGHT BUT NOT HEAVY EQUIPMENT FROM BEING USED TO INSTALL THE COMPONENTS (MEDIA, MEDIA SET), THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

- CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:**
- CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFILTRANT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
 - CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WIRES, OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLINGS FOR CONNECTION OF UNDERDRAIN PIPE. PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM ON PLANS OR AS DESIGNED BY ENGINEER. CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DETAIL. CONTRACTOR SHALL PROVIDE SHOULDER AS SHOWN ON DETAIL AND ON PLAN SHEETS.
 - SOIL IS REQUIRED TO STAY IN MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
 - CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
 - CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
 - CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

- CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (A) ON THIS DETAIL:**
- PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE EXCAVATION.
 - PLACE 1" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY CONNECT TO THE PIPING/FITTINGS THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
 - PLACE 2" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
 - PLACE 2" DOUBLE SHEDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
 - REMOVE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
 - PLACE ENERGY DISSIPATION ROCK (AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
 - PLACE CLEANOUT ADAPTER PLUG AND PIPING.
 - PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

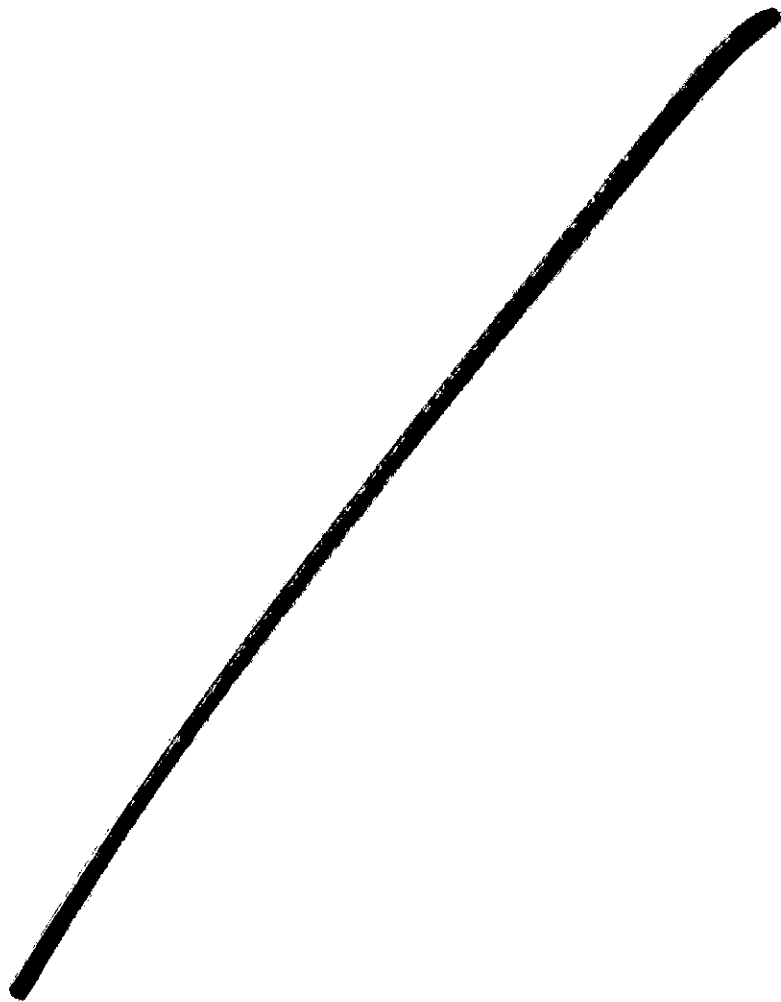
SECTION A-A VIEW

CONTECH
ENGINEERED SOLUTIONS LLC
www.conteches.com
9425 Central Express Dr., Suite 400, Wood County, OH 45098
800-338-1122 513-946-1000 513-946-5789 FAX

FILTERRA BIOSCAPE™ SYSTEM
STANDARD DETAIL

Attachment 4

S-1 Storm Drain Message and Signage



Purpose

Waste materials dumped into storm drain inlets can adversely impact surface and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can educate the public and prevent waste dumping. This fact sheet contains details on the installation of storm drain messages at storm drain inlets located in new or redeveloped commercial, industrial, and residential sites.

Design Criteria

Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or the drain that discharges to a receiving water.

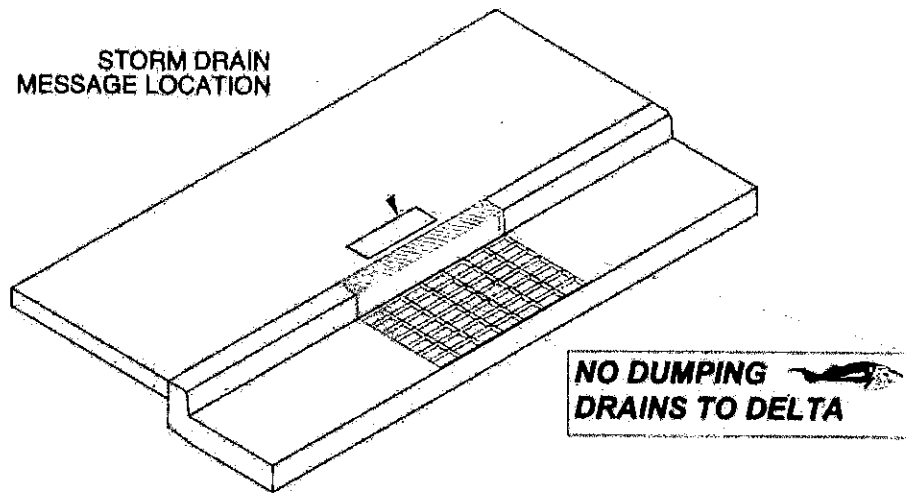
Storm drain message markers, placards or concrete stamps are required at all storm drain inlets within the boundary of the development project. The marker should be placed in clear sight adjacent to the inlet (see **Figure 4-1**). All storm drain inlet locations must be identified on the development site map.

Signs with language and/or graphical icons, which prohibit illegal dumping, shall be posted at designated public access points along channels and streams within a project area. Consult the City of Stockton Department of Municipal Utilities, Technical Services Division or the San Joaquin County Department of Public Works, Community Infrastructure Division to determine specific signage requirements.

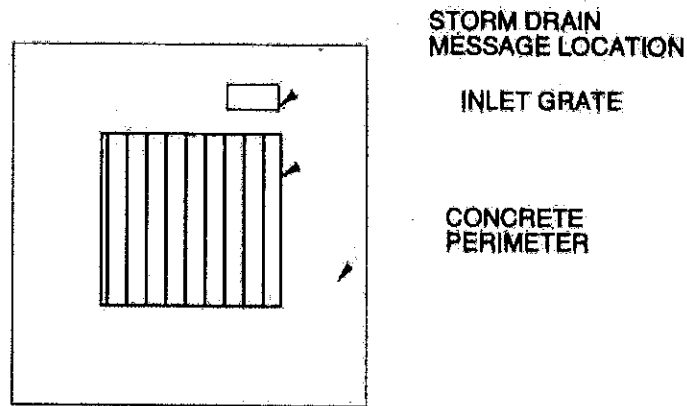
Maintenance Requirements

Legibility of markers and signs shall be maintained.

S-1: Storm Drain Message and Signage



CURB TYPE INLET



AREA TYPE INLET

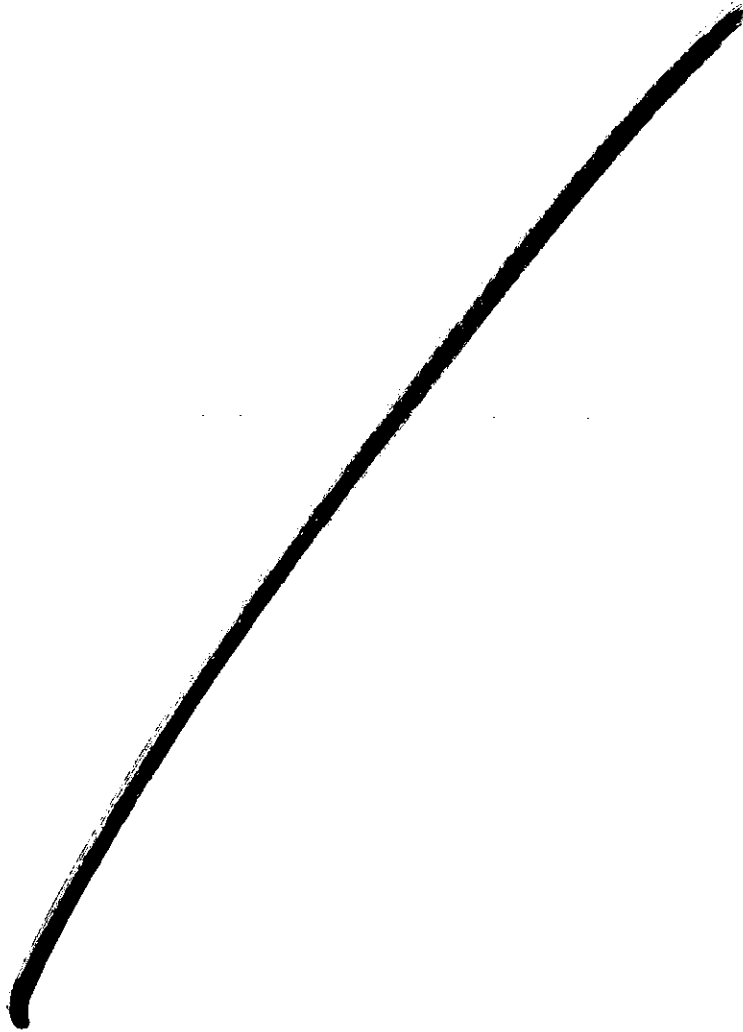
NOTES:

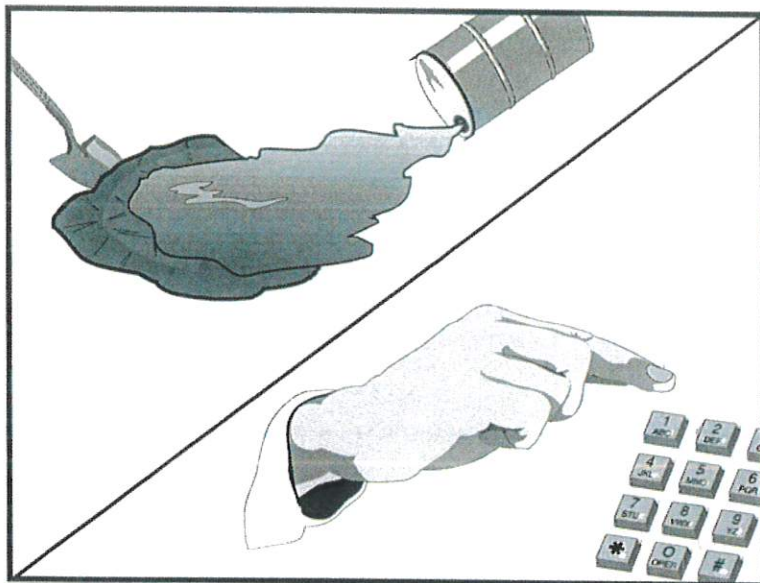
1. DESIGN OF STORM DRAIN MESSAGE SHALL BE IN ACCORDANCE WITH DETAILS SHOWN ABOVE.
2. FOR NEW DEVELOPMENT, MESSAGE AND SYMBOL SHALL BE PERMANENTLY PLACED WITH THE USE OF BOMANITE, STAMPED INTO THE CONCRETE, OR OTHER METHODS APPROVED BY THE CITY ENGINEER.
3. FOR REDEVELOPMENT, MESSAGE AND SYMBOL SHALL BE PLACED WITH THE USE OF THERMOPLASTIC PAVEMENT MARKINGS.
4. PAINTING SHALL NOT BE ALLOWED FOR NEW DEVELOPMENT OR REDEVELOPMENT. PAINTING SHALL ONLY BE ALLOWED IN EXISTING AREAS FOR COMMUNITY AWARENESS ACTIVITIES. LETTERS SHALL BE 1-1/2 INCHES IN HEIGHT. OUTSIDE DIMENSION OF PUBLIC NOTICE BACKGROUND SHALL FIT BACK OF INLET OR BE PLACED IN SIDEWALK IMMEDIATELY BEHIND INLET AND SHALL BE 4 INCHES X 24 INCHES MINIMUM. LETTERING AND GRAPHIC SHALL BE BLACK WITH GRAY BACKGROUND UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
5. DRIVEWAY INLETS SHALL HAVE NOTICE IN DRIVEWAY ADJACENT TO INLET.

Figure 4-1. Storm Drain Message Location

Attachment 5

WM-04 Spill Prevention and Control





Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	<input checked="" type="checkbox"/>

Legend:

- Primary Objective
- Secondary Objective

Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	<input checked="" type="checkbox"/>
Trash	<input checked="" type="checkbox"/>
Metals	<input checked="" type="checkbox"/>
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	<input checked="" type="checkbox"/>

Potential Alternatives

None



- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runoff during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
 - Contain the spread of the spill.
 - Recover spilled materials.
 - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
 - Contain spread of the spill.
 - Notify the project foreman immediately.
 - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
 - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
 - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
 - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
 - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
 - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
 - Notification should first be made by telephone and followed up with a written report.
 - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
 - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runoff of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

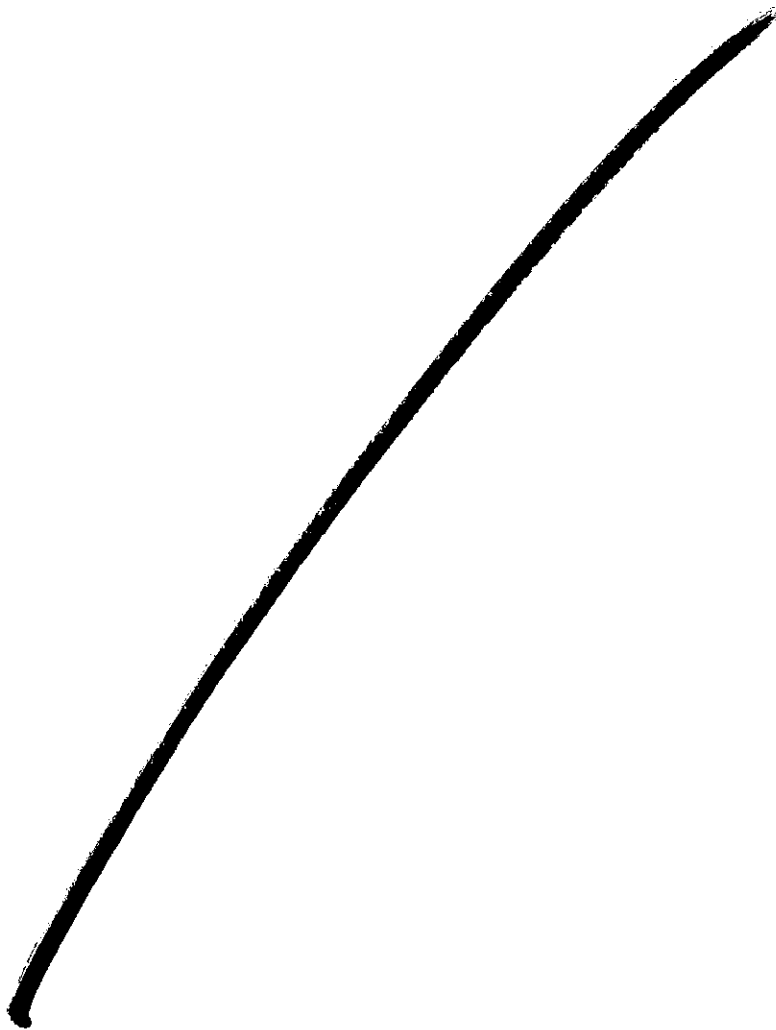
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Attachment 6
Filtterra Operations and Maintenance Manual



Filterra Owner's Manual



filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS



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Enclosed

Local Area Filterra Plant List



Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation **MUST** be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

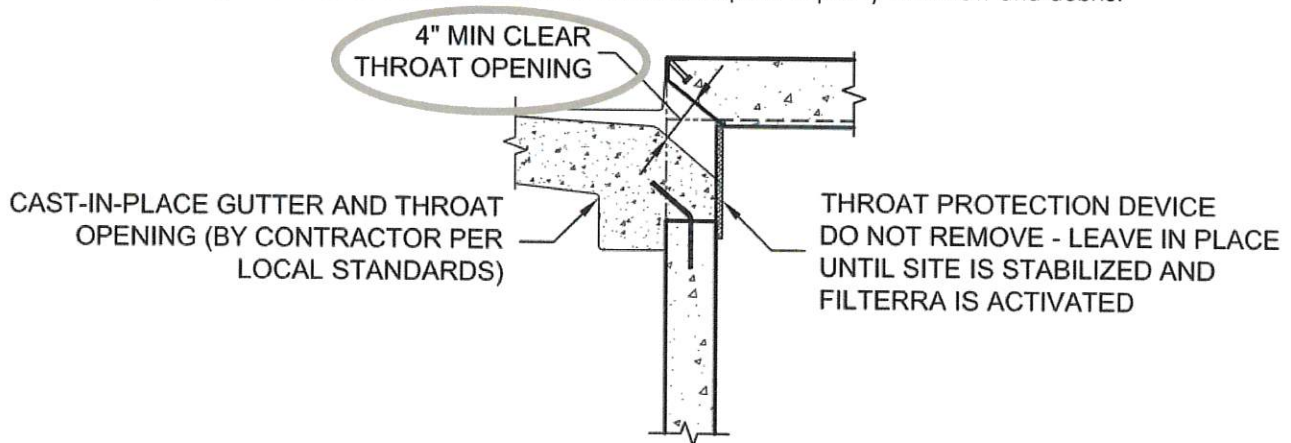
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft ²)	Volume at 3" (ft ³)	# of 2 ft ³ Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes no
Damage to Box Structure	yes no
Damage to Grate	yes no
Is Bypass Clear	yes no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes no
Cups/ Bags	yes no
Leaves	yes no
Buckets Removed	_____



- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____	(ft)
Width at Widest Point	_____	(ft)
Health		healthy unhealthy
Damage to Plant		yes no
Plant Replaced		yes no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.

Maintenance is ideally to be performed twice annually.

Filterra Inspection & Maintenance Log

Filterra System Size/Model: _____ Location: _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	5 - 5 gal Buckets	3"	Lowe's Premium Brown Mulch	4'	Galaxy Magnolia	- Standing water in downstream structure	- Removed blockage in downstream structure

Appendix 1 – Filterra® Activation Checklist



Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
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		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Attach additional sheets as necessary.

NOTE: A charge of \$500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

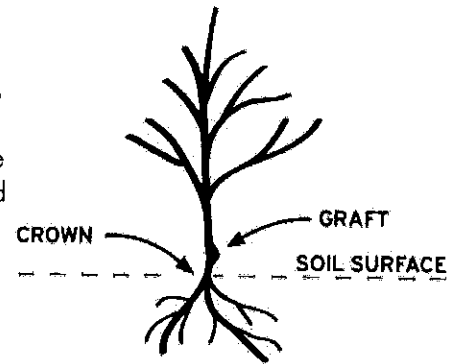
Signature _____

Date _____

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection

- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.



Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.





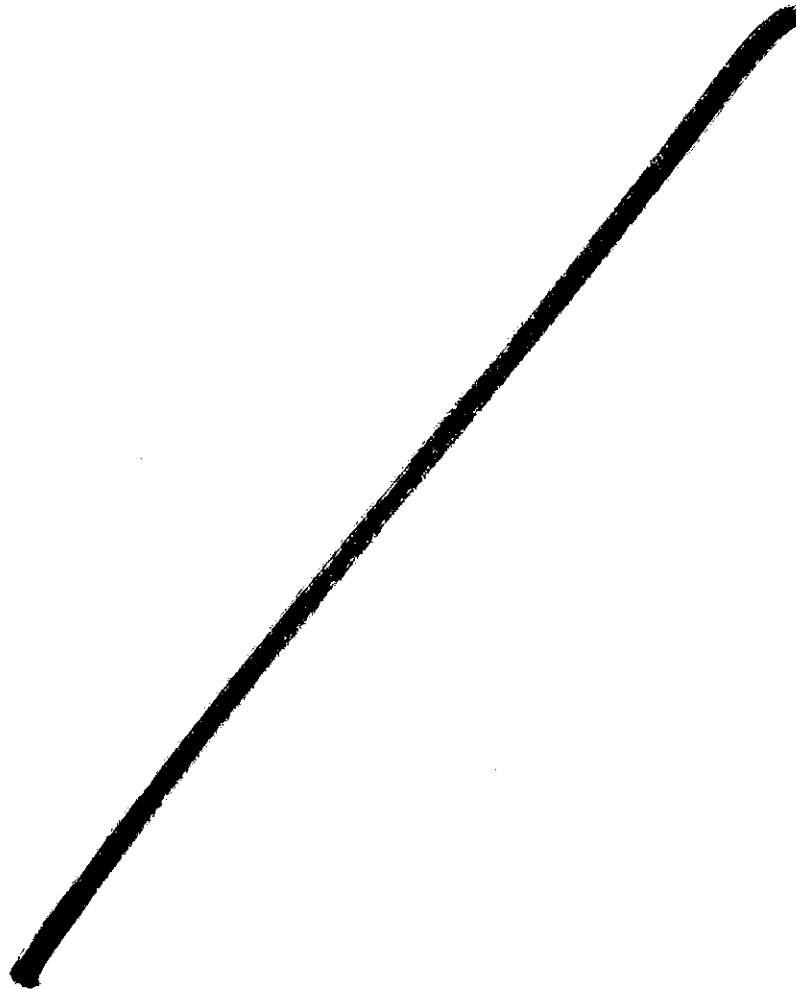
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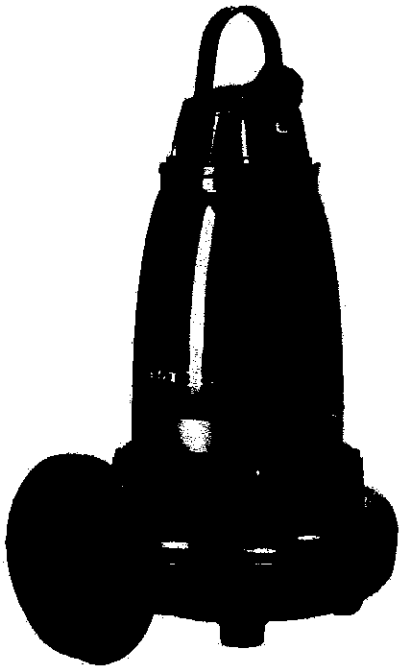
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Attachment 7
Flygt 3153 Operations and Maintenance Manual



Installation,
Operation, and
Maintenance Manual



Flygt 3153

FLYGT
a xylem brand

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Introduction and Safety

Introduction

Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance



CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

NOTICE:

Save this manual for future reference, and keep it readily available at the location of the unit.

Safety



WARNING:

- The operator must be aware of safety precautions to prevent physical injury.
 - Any pressure-containing device can explode, rupture, or discharge its contents if it is over-pressurized. Take all necessary measures to avoid over-pressurization.
 - Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment. This includes any modification to the equipment or use of parts not provided by Xylem. If there is a question regarding the intended use of the equipment, please contact an Xylem representative before proceeding.
 - This manual clearly identifies accepted methods for disassembling units. These methods must be adhered to. Trapped liquid can rapidly expand and result in a violent explosion and injury. Never apply heat to impellers, propellers, or their retaining devices to aid in their removal.
 - Do not change the service application without the approval of an authorized Xylem representative.
-



CAUTION:

You must observe the instructions contained in this manual. Failure to do so could result in physical injury, damage, or delays.




Safety terminology and symbols

About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product
- Product malfunction

Hazard levels

Hazard level	Indication
 <p>DANGER:</p>	<p>A hazardous situation which, if not avoided, will result in death or serious injury</p>
 <p>WARNING:</p>	<p>A hazardous situation which, if not avoided, could result in death or serious injury</p>
 <p>CAUTION:</p>	<p>A hazardous situation which, if not avoided, could result in minor or moderate injury</p>
<p>NOTICE:</p>	<ul style="list-style-type: none"> • A potential situation which, if not avoided, could result in undesirable conditions • A practice not related to personal injury

Hazard categories

Hazard categories can either fall under hazard levels or let specific symbols replace the ordinary hazard level symbols.

Electrical hazards are indicated by the following specific symbol:



Electrical Hazard:

These are examples of other categories that can occur. They fall under the ordinary hazard levels and may use complementing symbols:

- Crush hazard
- Cutting hazard
- Arc flash hazard

Magnetic hazard

Magnetic hazards are indicated by a specific symbol that replaces the typical hazard level symbols:



CAUTION:

Environmental safety

The work area

Always keep the station clean to avoid and/or discover emissions.

Waste and emissions regulations

Observe these safety regulations regarding waste and emissions:

- Appropriately dispose of all waste.
- Handle and dispose of the processed liquid in compliance with applicable environmental regulations.
- Clean up all spills in accordance with safety and environmental procedures.
- Report all environmental emissions to the appropriate authorities.



WARNING:

Do NOT send the product to the Xylem manufacturer if it has been contaminated by any nuclear radiation. Inform Xylem so that accurate actions can take place.

Electrical installation

For electrical installation recycling requirements, consult your local electric utility.

Recycling guidelines

Always recycle according to these guidelines:

1. Follow local laws and regulations regarding recycling if the unit or parts are accepted by an authorized recycling company.
2. If the first guideline is not applicable, then return the unit or parts to your Xylem representative.

User safety

General safety rules

These safety rules apply:

- Always keep the work area clean.
- Pay attention to the risks presented by gas and vapors in the work area.
- Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards.
- Always bear in mind the risk of drowning, electrical accidents, and burn injuries.

Safety equipment

Use safety equipment according to the company regulations. Use this safety equipment within the work area:

- Hard hat
- Safety goggles, preferably with side shields
- Protective shoes
- Protective gloves
- Gas mask
- Hearing protection
- First-aid kit
- Safety devices

NOTICE:

Never operate a unit unless safety devices are installed. Also see specific information about safety devices in other chapters of this manual.

Electrical connections

Electrical connections must be made by certified electricians in compliance with all international, national, state, and local regulations. For more information about requirements, see sections dealing specifically with electrical connections.

Hazardous liquids

The product is designed for use in liquids that can be hazardous to your health. Observe these rules when you work with the product:

- Make sure that all personnel who work with biologically hazardous liquids are vaccinated against diseases to which they may be exposed.
- Observe strict personal cleanliness.

Wash the skin and eyes

Follow these procedures for chemicals or hazardous fluids that have come into contact with your eyes or your skin:

Condition	Action
Chemicals or hazardous fluids in eyes	<ol style="list-style-type: none"> 1. Hold your eyelids apart forcibly with your fingers. 2. Rinse the eyes with eyewash or running water for at least 15 minutes. 3. Seek medical attention.
Chemicals or hazardous fluids on skin	<ol style="list-style-type: none"> 1. Remove contaminated clothing. 2. Wash the skin with soap and water for at least 1 minute. 3. Seek medical attention, if necessary.

Ex-approved products

Follow these special handling instructions if you have an Ex-approved unit.

Personnel requirements

These are the personnel requirements for Ex-approved products in potentially explosive atmospheres:

- All work on the product must be carried out by certified electricians and Xylem-authorized mechanics. Special rules apply to installations in explosive atmospheres.
- All users must know about the risks of electric current and the chemical and physical characteristics of the gas, the vapor, or both present in hazardous areas.
- Any maintenance for Ex-approved products must conform to international and national standards (for example, IEC/EN 60079-17).

Xylem disclaims all responsibility for work done by untrained and unauthorized personnel.

Product and product handling requirements

These are the product and product handling requirements for Ex-approved products in potentially explosive atmospheres:

- Only use the product in accordance with the approved motor data.
- You must fully submerge the Ex-approved product during normal operation. Dry running during service and inspection is only permitted outside the classified area.
- Before you start work on the product, make sure that the product and the control panel are isolated from the power supply and the control circuit, so they cannot be energized.
- Do not open the product while it is energized or in an explosive gas atmosphere.
- Make sure that thermal contacts are connected to a protection circuit according to the approval classification of the product, and that they are in use.
- Intrinsically safe circuits are normally required for the automatic level-control system by the level regulator if mounted in zone 0.
- The yield stress of fasteners must be in accordance with the approval drawing and the product specification.

- Do not modify the equipment without approval from an authorized Xylem representative.
- Only use parts that are provided by an authorized Xylem representative.

Guidelines for compliance

Compliance is fulfilled only when you operate the unit within its intended use. Do not change the conditions of the service without the approval of an Xylem representative. When you install or maintain explosion proof products, always comply with the directive and applicable standards (for example, IEC/EN 60079-14).

Minimum permitted liquid level

See the dimensional drawings of the product for the minimum permitted liquid level according to the approval for explosion proof products. If the information is missing on the dimensional drawing, the product must be fully submerged. Level-sensing equipment must be installed if the product can be operated at less than the minimum submersion depth.

Monitoring equipment

For additional safety, use condition-monitoring devices. Condition-monitoring devices include but are not limited to the following:

- Level indicators
- Temperature detectors

Product warranty

Coverage

Xylem undertakes to remedy defects in products from Xylem under these conditions:

- The faults are due to defects in design, materials, or workmanship.
- The faults are reported to an Xylem representative within the warranty period.
- The product is used only under the conditions described in this manual.
- The monitoring equipment incorporated in the product is correctly connected and in use.
- All service and repair work is done by Xylem-authorized personnel.
- Genuine Xylem parts are used.
- Only Ex-approved spare parts and accessories authorized by Xylem are used in Ex-approved products.

Limitations

The warranty does not cover defects caused by these situations:

- Deficient maintenance
- Improper installation
- Modifications or changes to the product and installation made without consulting Xylem
- Incorrectly executed repair work
- Normal wear and tear

Xylem assumes no liability for these situations:

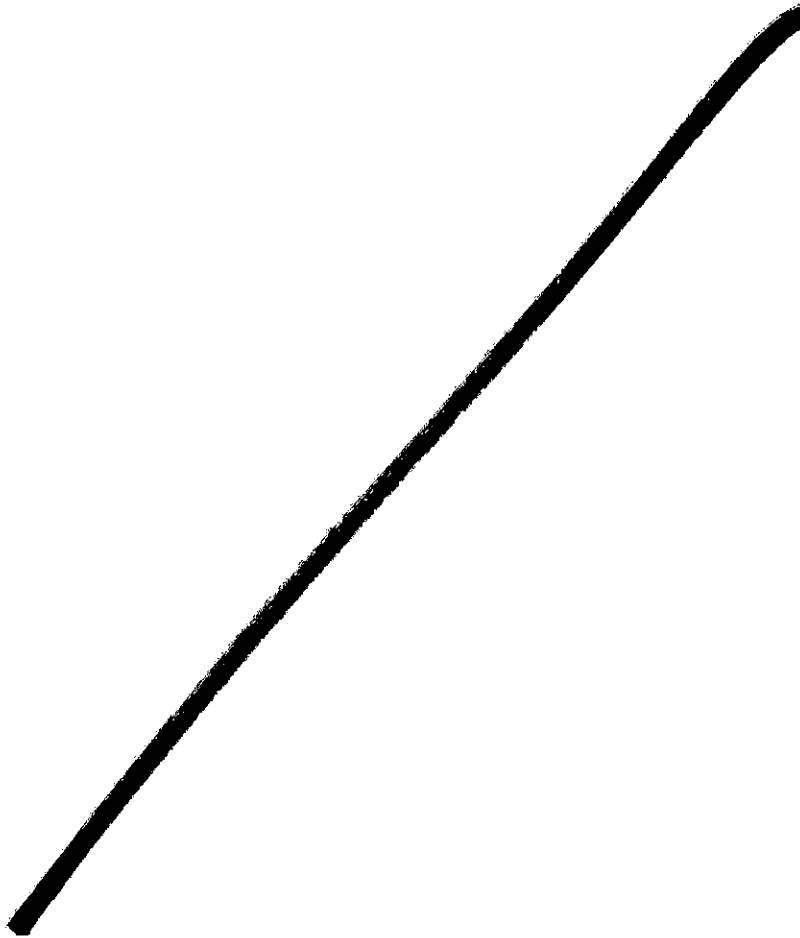
- Bodily injuries
- Material damages
- Economic losses

Warranty claim

Xylem products are high-quality products with expected reliable operation and long life. However, should the need arise for a warranty claim, then contact your Xylem representative.

Spare parts

Xylem guarantees that spare parts will be available for 15 years after the manufacture of this product has been discontinued.



Transportation and Storage

Inspect the delivery

Inspect the package

1. Inspect the package for damaged or missing items upon delivery.
2. Note any damaged or missing items on the receipt and freight bill.
3. File a claim with the shipping company if anything is out of order.
If the product has been picked up at a distributor, make a claim directly to the distributor.

Inspect the unit

1. Remove packing materials from the product.
Dispose of all packing materials in accordance with local regulations.
2. Inspect the product to determine if any parts have been damaged or are missing.
3. If applicable, unfasten the product by removing any screws, bolts, or straps.
For your personal safety, be careful when you handle nails and straps.
4. Contact your sales representative if anything is out of order.

Transportation guidelines

Precautions



WARNING:

- Stay clear of suspended loads.
 - Observe accident prevention regulations in force.
-

Position and fastening

The unit can be transported either horizontally or vertically. Make sure that the unit is securely fastened during transportation, and cannot roll or fall over.

Lifting



WARNING:

- Crush hazard. The unit and the components can be heavy. Use proper lifting methods and wear steel-toed shoes at all times.
 - Lift and handle the product carefully, using suitable lifting equipment.
 - The product must be securely harnessed for lifting and handling. Use eyebolts or lifting lugs if available.
 - Always lift the unit by its lifting handle. Never lift the unit by the motor cable or by the hose.
 - Do not attach sling ropes to shaft ends.
-

Lifting equipment

Lifting equipment is always required when handling the unit. It must fulfill the following requirements:

- The minimum height (contact Xylem for information) between the lifting hook and the floor must be sufficient to lift the unit.
- The lifting equipment must be able to hoist the unit straight up and down, preferably without the need for resetting the lifting hook.
- The lifting equipment must be securely anchored and in good condition.
- The lifting equipment must support weight of the entire assembly and must only be used by authorized personnel.
- Two sets of lifting equipment must be used to lift the unit for repair work.
- The lifting equipment must be dimensioned to lift the unit with any remaining pumped media in it.
- The lifting equipment must not be oversized.

NOTICE:

Oversized lifting equipment could cause damage if the unit should stick when being lifted.

Temperature ranges for transportation, handling and storage

Handling at freezing temperature

At temperatures below freezing, the product and all installation equipment, including the lifting gear, must be handled with extreme care.

Make sure that the product is warmed up to a temperature above the freezing point before starting up. Avoid rotating the impeller/propeller by hand at temperatures below the freezing point. The recommended method to warm the unit up is to submerge it in the liquid which will be pumped or mixed.

NOTICE:

Never use a naked flame to thaw the unit.

Unit in as-delivered condition

If the unit is still in the condition in which it left the factory - all packing materials are undisturbed - then the acceptable temperature range during transportation, handling and storage is: -50°C (-58°F) to $+60^{\circ}\text{C}$ ($+140^{\circ}\text{F}$).

If the unit has been exposed to freezing temperatures, then allow it to reach the ambient temperature of the sump before operating.

Lifting the unit out of liquid

The unit is normally protected from freezing while operating or immersed in liquid, but the impeller/propeller and the shaft seal may freeze if the unit is lifted out of the liquid into a surrounding temperature below freezing.

Units equipped with an internal cooling system are filled with a mixture of water and 30% glycol. This mixture remains a flowing liquid at temperatures down to -13°C (9°F). Below -13°C (9°F), the viscosity increases such that the glycol mixture will lose its flow properties. However, the glycol-water mixture will not solidify completely and thus cannot harm the product.

Follow these guidelines to avoid freezing damage:

1. Empty all pumped liquid, if applicable.
2. Check all liquids used for lubrication or cooling, both oil and water-glycol mixtures, for the presence of water. Change if needed.

Storage guidelines

Storage location

The product must be stored in a covered and dry location free from heat, dirt, and vibrations.

NOTICE:

- Protect the product against humidity, heat sources, and mechanical damage.
- Do not place heavy weights on the packed product.

Freezing precautions

The unit is frost-proof while operating or immersed in liquid, but the impeller/propeller and the shaft seal may freeze if the unit is lifted out of the liquid into a surrounding temperature below freezing.

Follow these guidelines to avoid freezing damage:

When	Guideline
Before storage	<ul style="list-style-type: none"> • The unit must be allowed to run for a short time after raising it to discharge remaining pumped liquid. This does not apply to impeller/propeller units. • The discharge opening must be covered in a suitable way, or placed facing down so that any still remaining pumped liquid runs out. • If present, the cooling jacket must be drained manually by opening the air vent screws at the top of the cooling jacket.
After storage	<p>If the impeller/propeller is frozen, it must be thawed by immersing the unit in liquid before operating the unit.</p> <p>NOTICE: Never use a naked flame to thaw the unit.</p>

Long-term storage

If the unit is stored more than 6 months, the following apply:

- Before operating the unit after storage, it must be inspected with special attention to the seals and the cable entry.
- The impeller/propeller must be rotated every other month to prevent the seals from sticking together.

Product Description

Pump design

The pump is submersible, and driven by an electric motor.

For a list of pump version and corresponding motor type, see [Motor data](#) (page 67).

Intended use

The product is intended for moving wastewater, sludge, raw and clean water. Always follow the limits that are given in [Application limits](#) (page 67). If there is a question regarding the intended use of the equipment, please contact an Xylem representative before proceeding.



WARNING:

In explosive or flammable environments, only use Ex- or MSHA-approved pumps.

NOTICE:

Do NOT use the pump in highly corrosive liquids.

Spare parts

- Modifications to the unit or installation should only be carried out after consulting with Xylem.
- Original spare parts and accessories that are authorized by Xylem are essential for compliance. The use of other parts can invalidate any claims for warranty or compensation. For more information contact your Xylem representative.

Pressure class

LT	Low head
MT	Medium head
HT	High head
SH	Super high head

Parts

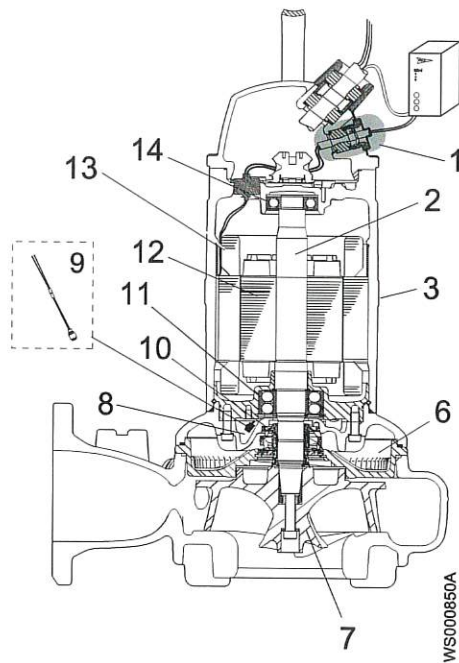


Figure 1: Without cooling jacket

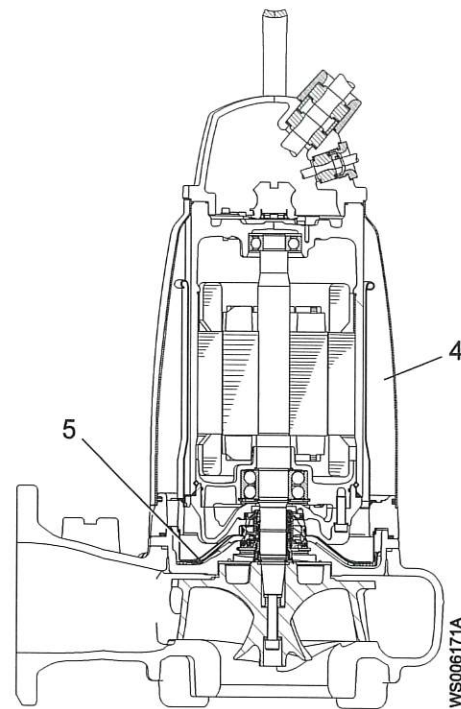


Figure 2: With cooling jacket

Position	Part	Description
1	Monitoring sensor	Optional sensor. For information about sensors, see Monitoring equipment (page 14).
2	Shaft	Stainless steel, with an integrated rotor
3	Cooling without jacket	The pump is cooled by the ambient liquid.
4	Cooling with jacket	The motor is cooled by a closed loop system. An integrated coolant pump circulates the coolant whenever the pump is operated.
5	Flow diffuser	Provides heat transfer from the coolant to the pumped fluid.
6	Seal housing	Includes a coolant that lubricates and cools the seals; the housing acts as a buffer between the pumped fluid and the electric motor
7	Impeller	N-impeller, a semi-open, two-vane impeller
8	Inspection chamber	Equipped with an FLS10 leakage sensor to prevent damages to the motor
9	FLS10	For information about FLS10, see Monitoring equipment (page 14).
10	Mechanical seals	Made of one of the following alternatives: <ul style="list-style-type: none"> • Alternative 1 <ul style="list-style-type: none"> • Inner seal: corrosion-resistant cemented carbide WCCR/WCCR • Outer seal: corrosion-resistant cemented carbide WCCR/WCCR • Alternative 2 <ul style="list-style-type: none"> • Inner seal: corrosion-resistant cemented carbide/Aluminum oxide WCCR/Al₂O₃ • Outer seal: silicon carbide RSiC/RSiC
11	Main bearings	Consisting of a two-row angular contact ball bearing
12	Motor	For information about the motor, see Motor data (page 67).

Position	Part	Description
13	Thermal contact/ Thermistors	For information about the thermal contact and thermistors, see Monitoring equipment (page 14).
14	Support bearing	Consisting of a two-row ball bearing

Monitoring equipment

The following applies to the monitoring equipment of the pump:

- The stator incorporates three thermal contacts connected in series that activate the alarm and stops the pump at overtemperature
- The thermal contacts open at 140°C (285°F).
- Ex-approved pumps must have thermal contacts connected to the control panel.
- The sensors must be connected to either the MiniCAS II monitoring equipment or an equivalent equipment.
- The monitoring equipment must be of a design that makes automatic restart impossible.
- The pump is supplied with an inspection sensor FLS 10 for sensing the presence of any liquid in the inspection chamber.
- Information in the junction box shows if the pump is equipped with optional sensors.

Optional sensors

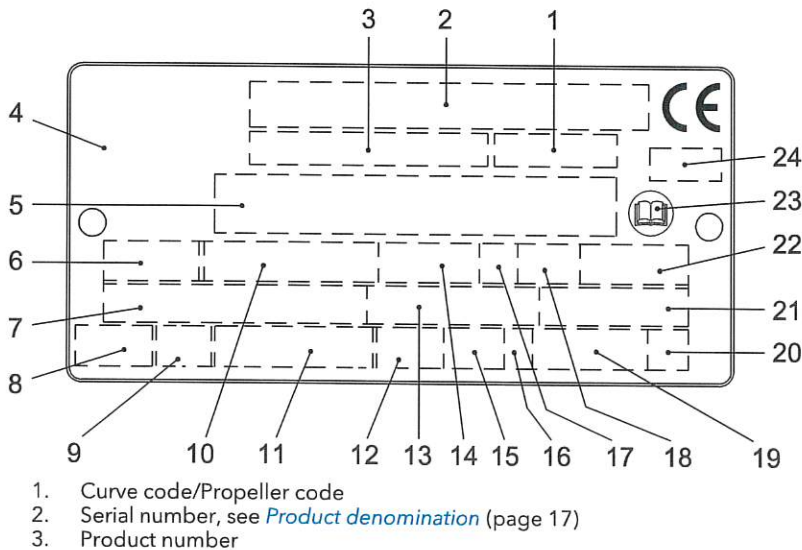
Thermistor Thermistors are optional sensors for measuring the temperature. They are connected in series in the stator and activate the alarm at overtemperature. Thermistors are not applicable to Ex-approved pumps.

NOTICE:

Thermistor must never be exposed to voltages higher than 2.5 V. If the voltage exceeds this value, for example when the control circuit is tested, the thermistors will be destroyed.

The data plate

The data plate is a metal label located on the main body of the products. The data plate lists key product specifications. Specially approved products also have an approval plate.






4. Country of origin
5. Additional information
6. Phase; type of current; frequency
7. Rated voltage
8. Thermal protection
9. Thermal class
10. Rated shaft power
11. International standard
12. Degree of protection
13. Rated current
14. Rated speed
15. Maximum submergence
16. Direction of rotation: L=left, R=right
17. Duty class
18. Duty factor
19. Product weight
20. Locked rotor code letter
21. Power factor
22. Maximum ambient temperature
23. Read installation manual
24. Notified body. Only for EN-approved Ex-products

Figure 3: The data plate

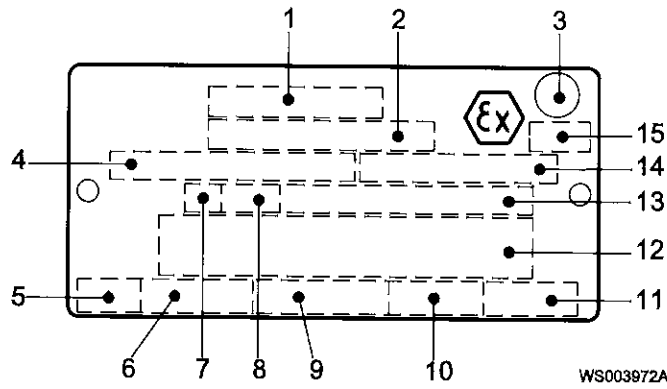
Approvals

Product approvals for hazardous locations

Pump	Approval
<ul style="list-style-type: none"> • 3153.091 • 3153.095 • 3153.390 • 3153.810 • 3153.830 • 3153.850 	European Norm (EN) <ul style="list-style-type: none"> • ATEX Directive • EN 60079-0, EN 60079-1, EN 1127-1 •  I M2 Ex d I •  II 2 G Ex d IIB T3
	EN approval for cable entry: <ul style="list-style-type: none"> • Certificate number: INERIS 02ATEX9008 U •  II 2 G Ex d IIC or I M2 Ex d I
	IEC <ul style="list-style-type: none"> • IECEx scheme • IEC 60079-0, IEC 60079-1 • Ex d I • Ex d IIB T3
	Factory Mutual (FM) <ul style="list-style-type: none"> • Class I, Div 1, Group C and D • Dust ignition proof for use in Class II, Div 1, Group E, F and G • Suitable for use in Class III, Div 1, Hazardous Locations

EN approval plate

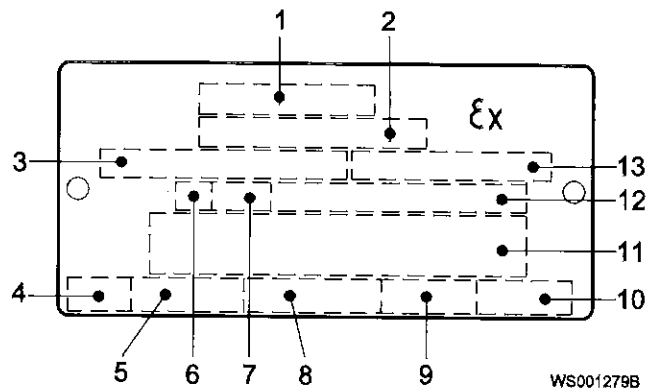
This illustration describes the EN approval plate and the information contained in its fields.



1. Approval
2. Approval authority + approval number
3. Approval for Class I
4. Approved drive unit
5. Stall time
6. Starting current/Rated current
7. Duty class
8. Duty factor
9. Input power
10. Rated speed
11. Controller
12. Additional information
13. Maximum ambient temperature
14. Serial number
15. ATEX marking

IEC approval plate

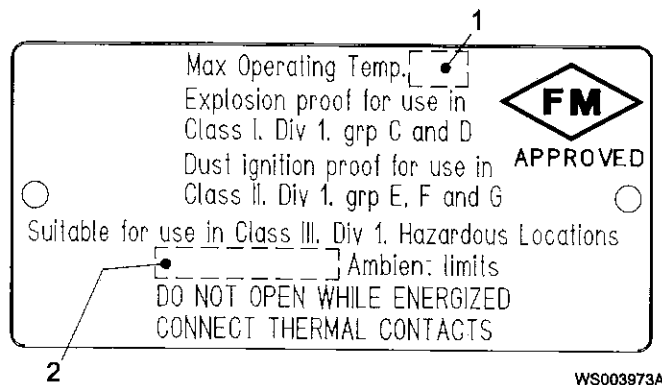
This illustration describes the IEC approval plate and the information contained in its fields. International Norm; not for EU member countries.



1. Approval
2. Approval authority + approval number
3. Approved for drive unit
4. Stall time
5. Starting current/Rated current
6. Duty class
7. Duty factor
8. Input power
9. Rated speed
10. Controller
11. Additional information
12. Max. ambient temperature
13. Serial number

FM approval plate

This illustration describes the FM approval plate and the information contained in its fields.



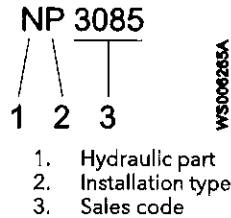
1. Temperature class
2. Maximum ambient temperature

Product denomination

Sales denomination

The sales denomination consists of the four-digit sales code and two letters that indicate the hydraulic end and type of installation.

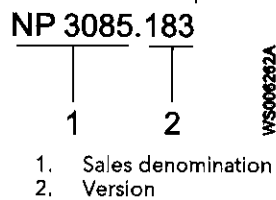
This is an example of a sales denomination, and an explanation of its parts.



Product code

The product code consists of nine characters divided into two parts.

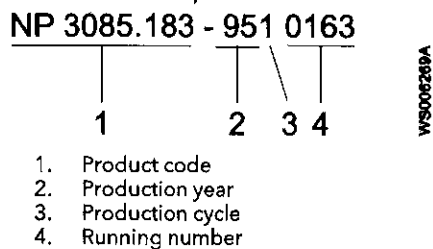
This is an example of a product code, and an explanation of its parts.



Serial number

The serial number is used for identification of an individual product, and is divided into four parts.

This is an example of a serial number, and an explanation of its parts.



Installation

Install the pump



WARNING:

- Electrical shock hazard. Check that the cable and cable entry have not been damaged during transport before installing the pump.
 - Note that special rules apply to installation in explosive atmospheres.
 - Make sure that the unit cannot roll or fall over and injure people or damage property.
 - Do not install CSA-approved products in locations that are classified as hazardous in the national electric code, ANSI/NFPA 70-2005.
 - Do not install the starter equipment in an explosive zone unless it is explosion-proof rated.
-



WARNING:

A permanent-magnet motor generates voltage when the shaft is rotating. Ensure that the shaft can not rotate before performing any electrical installation.

NOTICE:

- Do not run the pump dry.
 - Never force piping to make a connection with a pump.
 - Always remove all debris and waste material from the sump, inlet piping, and discharge connection, before you install the pump.
-

These requirements apply:

- Use the pump dimensional drawing in order to ensure proper installation.
- In S-, T-, and Z-installations the pump must be equipped with cooling jacket
- Provide a suitable barrier around the work area, for example, a guard rail.
- Check the explosion risk before you weld or use electric hand tools.
- Always check the impeller rotation before lowering the pump into the pumped liquid.
- If the unit has a permanent magnet motor, ensure that you have read and understood all safety instructions regarding permanent magnet motors.

Authority regulation

Vent the tank of a sewage machine station in accordance with local plumbing codes.

Fasteners



WARNING:

- Only use fasteners of the proper size and material.
 - Replace all corroded fasteners.
 - Make sure that all fasteners are properly tightened and that there are no missing fasteners.
-

Install with P-installation

In the P-installation, the pump is installed on a stationary discharge connection, and operates either completely or partially submerged in the pumped liquid. These requirements and instructions only apply when the installation is made according to the dimensional drawing.

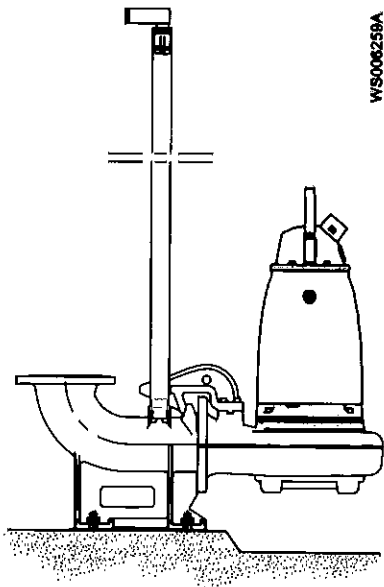


Figure 4: P-installation

These items are required:

- Guide bars
 - Guide bar bracket for attaching the guide equipment to the access frame or to the upper part of the sump
 - Level regulators or other control equipment for start, stop, and alarm
 - Cable holder for holding the cable and regulating the height of the level regulators
 - Access frame (with covers) to which the upper guide bar bracket and cable holder can be attached
 - Discharge connection for connecting the pump to the discharge line
The discharge connection has a flange which fits the pump casing flange and a bracket for attaching the guide equipment.
 - Fasteners for the discharge connection
 - Anchor bolts
1. Run a cable between the sump and the stator and monitoring equipment.
Make sure that the cable is neither sharply bent, nor pinched.
 2. Install the access frame:
 - a) Place the access frame in position and align it horizontally.
 - b) Grout the frame in place.
 3. Grout the anchor bolts in place.
Be careful when you align and position the discharge connection in relation to the access frame.
 4. Place the discharge connection in position, and tighten the nuts.
 5. Install the guide bars:
 - a) Secure the guide bars in the bracket.
 - b) Check that the guide bars are placed vertically. Use a level or a plumb line.
 6. Connect the discharge pipe to the discharge connection.

7. Prepare for the level regulator:
 - a) Bolt the cable holder to the access frame.
 - b) Attach the level regulator cable to the cable holder and adjust the height of the level regulator.
 - c) Protect bolts and nuts with a corrosion-preventive compound.
8. Lower the pump along the guide bars.
9. Secure the motor cable:
 - a) Fasten the permanent lifting device to the pump and to the access frame. For example, you can use a stainless-steel lifting chain with shackles.
 - b) Fasten the cable to the cable holder.
 Make sure that the cable cannot be sucked into the pump inlet or that it is neither sharply bent, or pinched. Support straps are required for deep installations.
 - c) Connect the motor cable and the starter and monitoring equipment according to the separate instructions.
 Make sure that the impeller rotation is correct. For more information, see [Check the impeller rotation](#) (page 33).

Clean all debris from the sump before starting the pump.

Install with S-installation

In the S-installation, the pump is transportable and intended to operate either completely or partially submerged in the pumped liquid. The pump is equipped with a connection for hose or pipe and stands on a base stand.

These requirements and instructions only apply when the installation is made according to the dimensional drawing. For information about the different installation types, see Parts List.

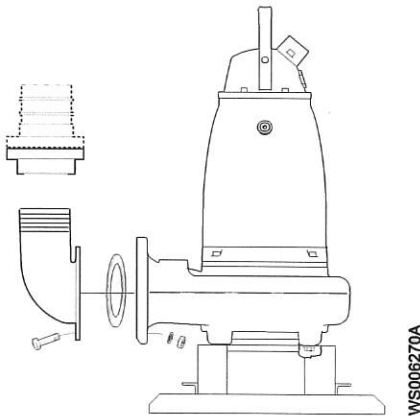


Figure 5: S-installation

1. Run the cable so that it has no sharp bends. Make sure that it is not pinched, and cannot be sucked into the pump inlet.
2. Connect the discharge line.
3. Lower the pump into the sump.
4. Place the pump on the base and make sure it cannot fall over or sink.
 Alternatively, the pump can be suspended with a lifting chain just above the sump bottom. Make sure that the pump cannot rotate at startup or during operation.
5. Connect the motor cable and the starter and monitoring equipment according to the separate instructions.
 Make sure that the impeller rotation is correct. For more information, see [Check the impeller rotation](#) (page 33).

Install with T/Z-installation

In the T-installation, the pump is installed in a vertical position in a dry well next to the wet sump. These requirements and instructions only apply when the installation is made according to the dimensional drawing.

In the Z-installation, the pump is installed in a horizontal position on a support stand in a dry well next to the wet sump, and a bell-mouth is connected to the inlet pipe. These requirements and instructions are for Z-installations that comply to the dimensional drawing.

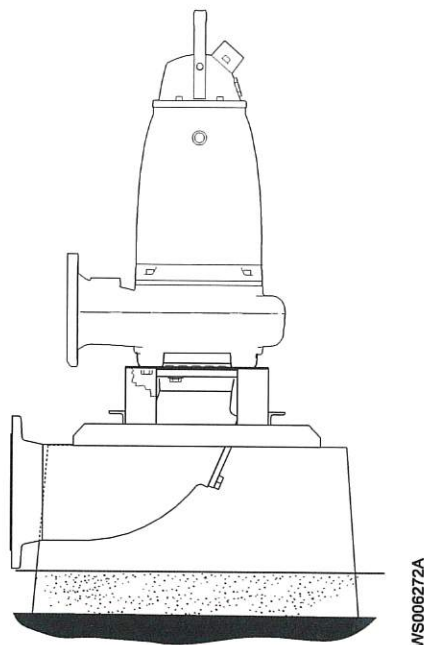


Figure 6: T-installation

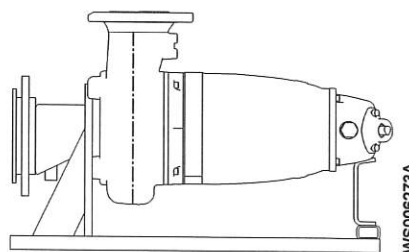


Figure 7: Z-installation

These items are required:

- Support stand and anchor bolts for anchoring the pump to a base
- Inlet elbow for connecting the suction line and discharge line
- Shut-off valves that allow you to remove the pump from service
- Air vent on the discharge side between the pump and the check valve
- Level regulators or other control equipment for start, stop, and alarm

NOTICE:

The risk of freezing is particularly high in T- or Z-installations.

1. Fasten the pump:
 - a) Use the anchor bolts to bolt the support stand to the concrete base.
 - b) Bolt the pump to the support stand and the suction connection.
2. Make sure that the pump is vertical for the T-installation or horizontal for the Z-installation.
3. Connect the suction line and discharge line.
4. Connect the motor cable and the starter and monitoring equipment according to the separate instructions.

Make sure that the impeller rotation is correct. For more information, see [Check the impeller rotation](#) (page 33).
5. Make sure that the weight of the pump does not put strain on the piping.

Make the electrical connections

General precautions



Electrical Hazard:

- A certified electrician must supervise all electrical work. Comply with all local codes and regulations.
 - Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized. This applies to the control circuit as well.
 - Leakage into the electrical parts can cause damaged equipment or a blown fuse. Keep the end of the motor cable above the liquid level.
 - Make sure that all unused conductors are insulated.
 - There is a risk of electrical shock or explosion if the electrical connections are not correctly carried out or if there is fault or damage on the product.
 - A permanent-magnet motor generates voltage when the shaft is rotating. Ensure that the shaft can not rotate before performing any electrical installation.
-



WARNING:

Do not install the starter equipment in an explosive zone unless it is explosion-proof rated.



CAUTION:

If the pump is equipped with automatic level control and/or internal contactor, there is a risk of sudden restart.

Requirements

These general requirements apply for electrical installation:

- The supply authority must be notified before installing the pump if it will be connected to the public mains. When the pump is connected to the public power supply, it may cause flickering of incandescent lamps when started.
- The mains voltage and frequency must agree with the specifications on the data plate. If the pump can be connected to different voltages, then the connected voltage is specified by a yellow sticker close to the cable entry.
- The fuses and circuit breakers must have the proper rating, and the pump overload protection (motor protection breaker) must be connected and set to the rated current according to the data plate and if applicable the cable chart. The starting current in direct-on-line start can be up to six times higher than the rated current.
- The fuse rating and the cables must be in accordance with the local rules and regulations.
- If intermittent operation is prescribed, then the pump must be provided with monitoring equipment supporting such operation.
- If stated on the data plate, then the motor is convertible between different voltages.
- The thermal contacts/thermistors must be in use.
- For FM-approved pumps, FLS must be connected and in use in order to meet approval requirements.

Cables

These are the requirements to follow when you install cables:

- The cables must be in good condition, not have any sharp bends, and not be pinched.
- The sheathing must not be damaged and must not have indentations or be embossed (with markings, etc.) at the cable entry.
- The cable entry seal sleeve and washers must conform to the outside diameter of the cable.
- The minimum bending radius must not be below the accepted value.
- If using a cable which has been used before, a short piece must be peeled off when refitting it so that the cable entry seal sleeve does not close around the cable at the same point again. If the outer sheath of the cable is damaged, then replace the cable. Contact an Xylem service shop.
- The voltage drop in long cables must be taken into account. The drive unit's rated voltage is the voltage measured at the cable connection point in the pump.
- The screened cable must be used according to the European CE requirements if a Variable Frequency Drive (VFD) is used. For more information, contact your Xylem representative (VFD-supplier).

Earthing (Grounding)



Electrical Hazard:

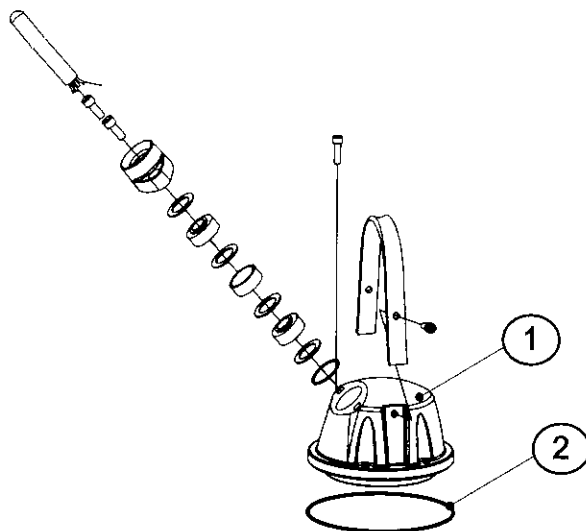
- You must earth (ground) all electrical equipment. This applies to the pump equipment, the driver, and any monitoring equipment. Test the earth (ground) lead to verify that it is connected correctly.
- If the motor cable is jerked loose by mistake, the earth (ground) conductor should be the last conductor to come loose from its terminal. Make sure that the earth (ground) conductor is longer than the phase conductors. This applies to both ends of the motor cable.
- Risk of electrical shock or burn. You must connect an additional earth- (ground-) fault protection device to the earthed (grounded) connectors if persons are likely to come into physical contact with the pump or pumped liquids.

Connect the motor cable to the pump



CAUTION:

Leakage into the electrical parts can cause damaged equipment or a blown fuse. Keep the end of the motor cable above the liquid level.



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1. Entrance cover
2. O-ring

For more information about the cable entry, see the Parts list.

1. Remove the entrance cover and the O-ring from the stator housing.
This provides access to the terminal board.
2. Check the data plate to see which connections are required for the power supply.
3. Arrange the connections on the terminal board in accordance with the required power supply.
Links (jumper strips) are not used with the Y/D start.
4. Connect the mains leads (L1, L2, L3, and earth (ground)) according to applicable cable chart.
The earth (ground) lead must be 100 mm (4.0 in.) longer than the phase leads in the junction box of the unit.
5. Make sure that the pump is correctly connected to earth (ground).
6. Connect the control leads to the applicable terminal board.
7. Make sure that any thermal contacts incorporated in the pump are properly connected to the terminal board.
8. Install the entrance cover and the O-ring on the stator housing.
9. Fasten the screws on the entrance flange so that the cable insertion assembly bottoms out.

Connect the motor cable to the starter and monitoring equipment



WARNING:

Do not install the starter equipment in an explosive zone unless it is explosion-proof rated.

NOTICE:

- Either thermal contacts or thermistors are incorporated in the pump.
- Thermal contacts must never be exposed to voltages higher than 250 V, breaking current maximum 4 A. It is recommended that they are connected to 24 V over separate fuses to protect other automatic equipment.

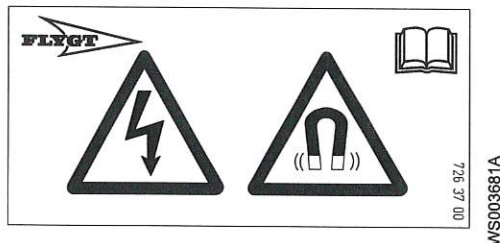
1. If thermal contacts are included in the pump installation, connect the T1 and T2 control conductors to the MiniCAS II monitoring equipment.

NOTICE:

Ex-approved products must always have the thermal contacts connected irrespective of the ambient temperature.

2. If thermistors are included in the pump installation, and screened or auxiliary cable is used, then connect T1(1) and T2(2) to thermistor relay or MAS 711, and T3(3) and T4 (4) to MiniCAS II or MAS 711.
3. Connect the mains leads (L1, L2, L3, and earth [ground]) to the starter equipment. For information about the phase sequence and the color codes of the leads, see [Cable charts](#) (page 25).
4. Ensure that the warning label is attached to the cable end. In case the label is missing, attach the spare label to the cable end.

The label is delivered with the pump.

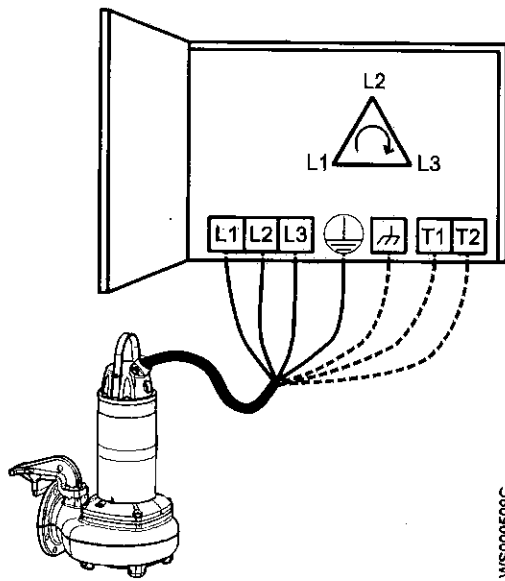


5. Check the functionality of the monitoring equipment:
 - a) Check that the signals and the tripping function work properly.
 - b) Check that the relays, lamps, fuses, and connections are intact.
 Replace any defective equipment.

Cable charts

Description

This topic contains general connection information. It also provides cable charts that show connection alternatives for use with different cables and power supply.

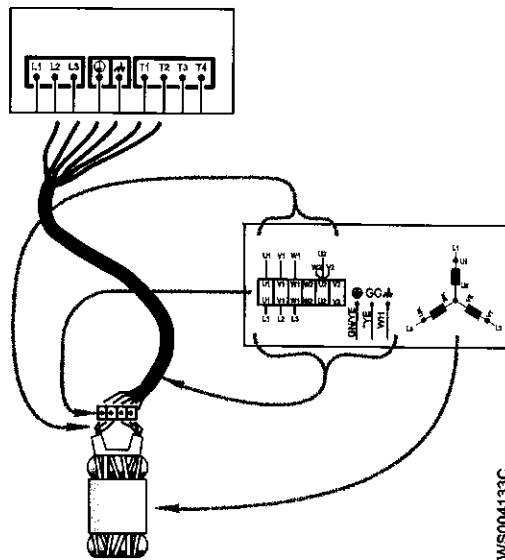


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Figure 8: Phase sequence

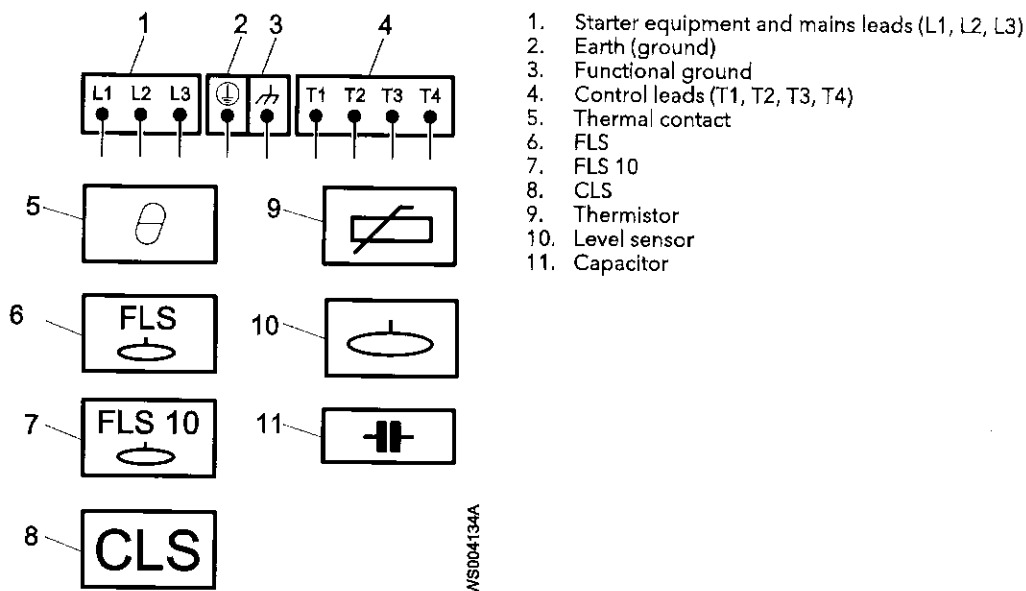
Connection locations

The figures in this section illustrate how to interpret the connection strip symbols.



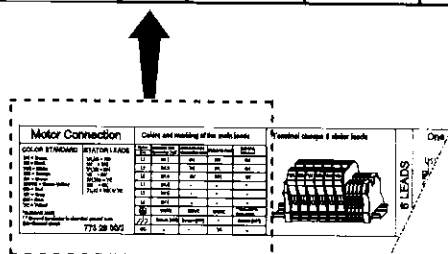
1. Stator leads
2. Terminal board
3. Motor cable leads
4. Stator (internal connection illustrated)

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Colors and markings of leads

Motor Connection		Colors and marking of the main leads				
COLOR STANDARD BN = Brown BK = Black WH = White OG = Orange GN = Green GN/YE = Green-Yellow RD = Red GY = Grey BU = Blue YE = Yellow *SUBCAB AWG ** Ground conductor is stranded around core GC=Ground check 773 29 00/2	STATOR LEADS U1,U5 = RD U2 = GN V1,V5 = BN V2 = BU W1,W5 = YE W2 = BK T1,T2 = WH or YE	Mains 3 ~	SUBCAB 7GX Screenflex 7GX	SUBCAB 4GX Screenflex 4GX	SUBCAB AWG	SUBCAB Screened
		L1	BK 1	BN	RD	BN
		L2	BK 2	BK	BK	BK
		L3	BK 3	GY	WH	GY
		L1	BK 4	-	-	-
		L2	BK 5	-	-	-
		L3	BK 6	-	-	-
		⊕	GN/YE	GN/YE	GN/YE	**Screen/PE from cores
		⏏	Screen (WH)	Screen (WH)	-	Screen (WH)
		GC	-	-	YE	-



Color code standard

Code	Description
BN	Brown
BK	Black
WH	White
OG	Orange
GN	Green
GNYE	Green-Yellow

Code	Description
RD	Red
GY	Grey
BU	Blue
YE	Yellow

Motor connection

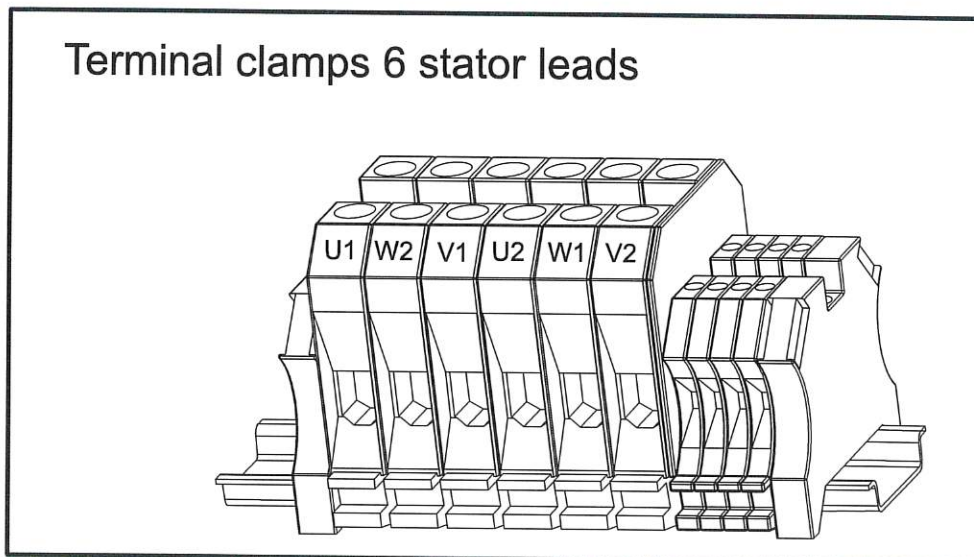


Figure 9: Terminal clamps, 6 stator leads

Connections included

- [6-leads connection](#) (page 28)
- [9-leads connection](#) (page 29)
- [Screened cable connection](#) (page 30)

6-leads connection

If a separate control cable is used, then the control cores in the motor cable are never used.

One cable (left) and two cables (right) Y-connection.

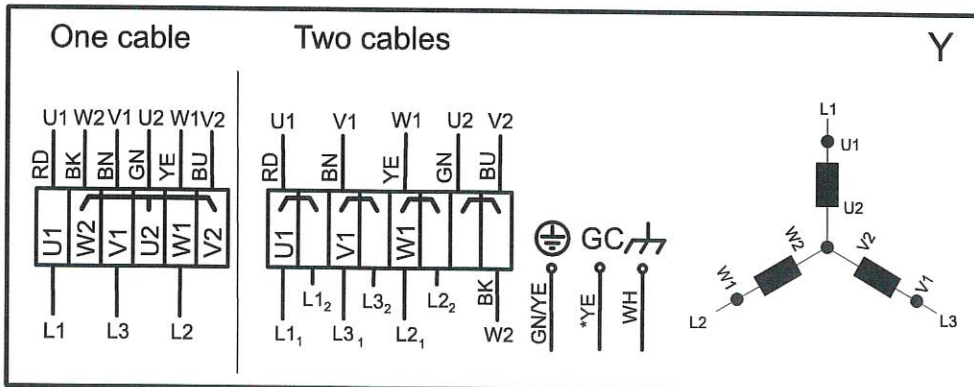


Figure 10: Y-connection

One cable (left) and two cables (right) D-connection.

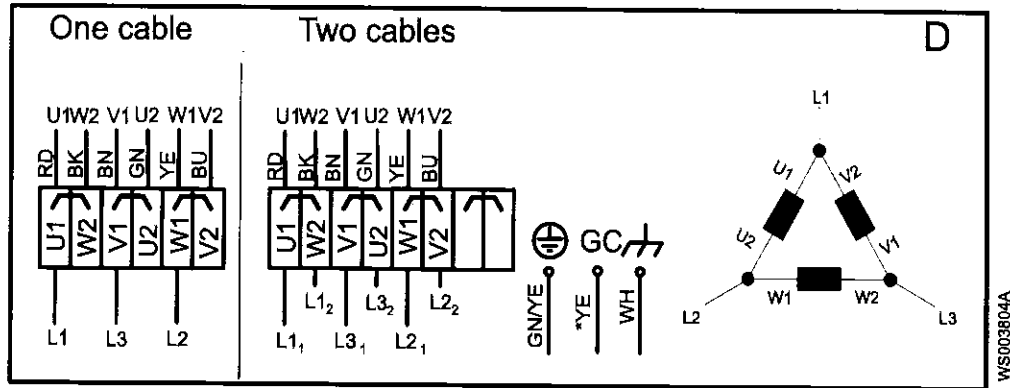


Figure 11: D-connection

One cable (left) and two cables (right) Y/ D-connection.

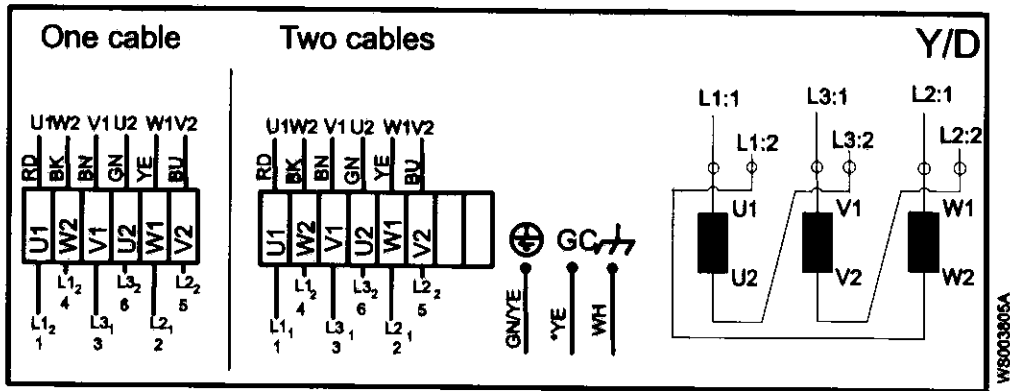


Figure 12: Y/D-connection

Y and D-connection, only applicable to 70 mm² terminal clamp.

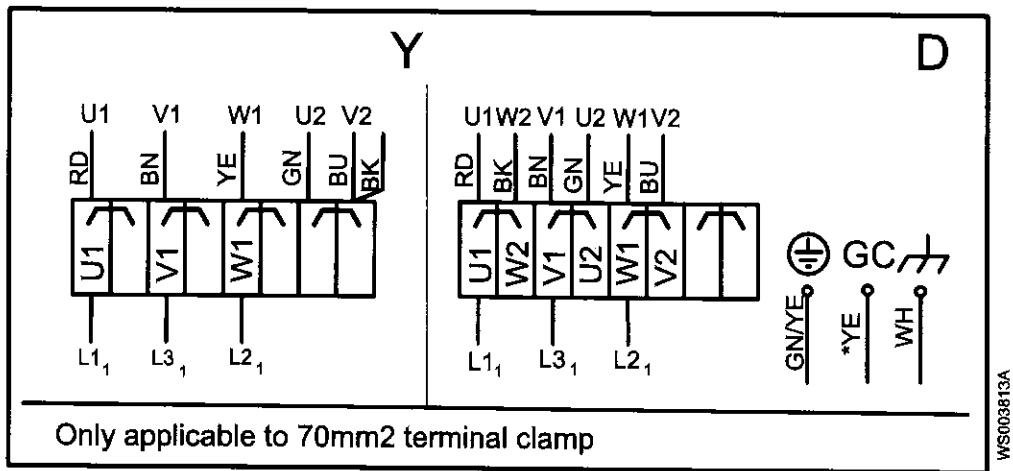


Figure 13: Y or D-connection

9-leads connection

If a separate control cable is used, then the control cores in the motor cable are never used.

One cable (left) and two cables (right) Y-parallel connection.

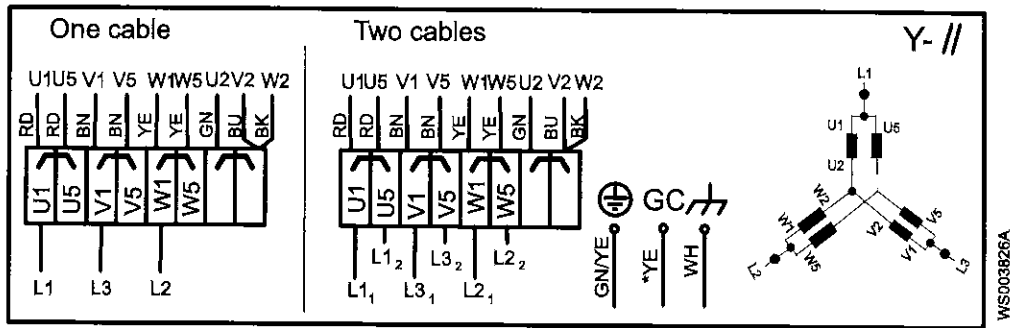


Figure 14: Y-parallel connection

One cable (left) and two cables (right) Y-serial connection.

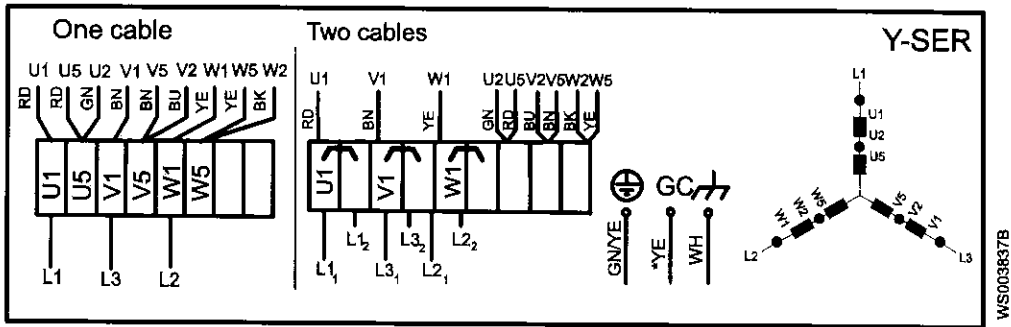


Figure 15: Y-serial connection

Screened cable connection

Cable without separate ground conductor. Screen as ground conductor.

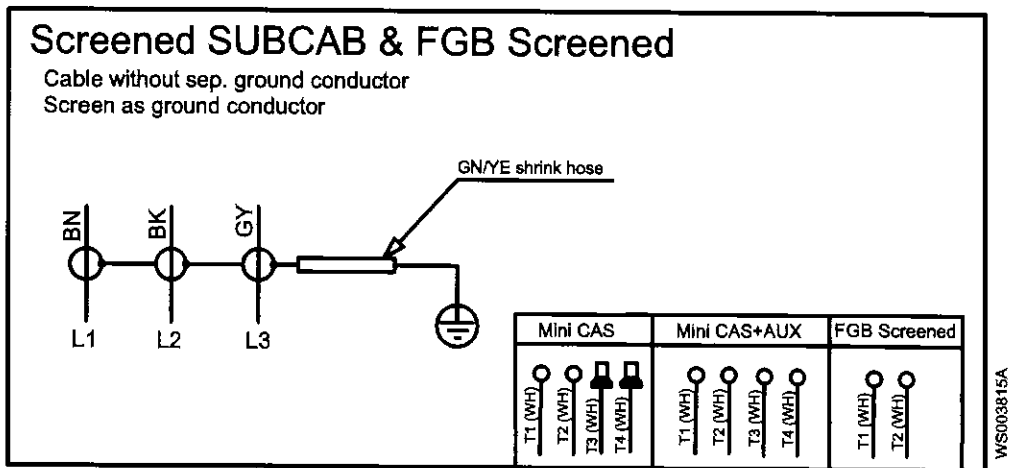
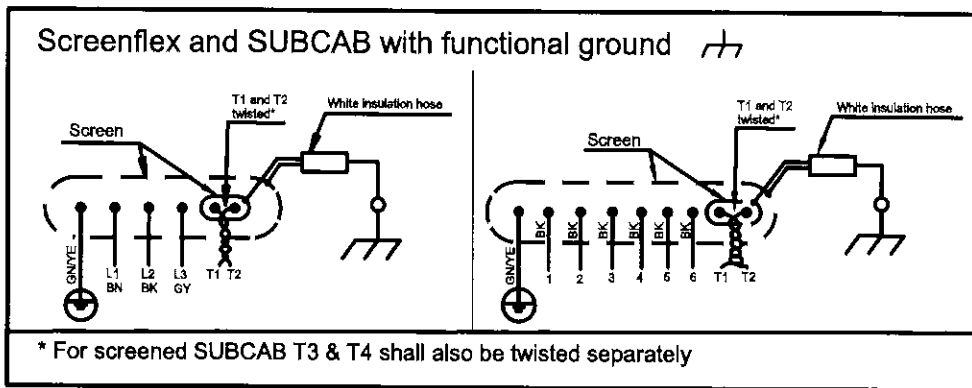


Figure 16: Screened SUBCAB and FGB Screened

* For screened SUBCAB T3 and T4 shall also be twisted separately.



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Figure 17: Screenflex and SUBCAB with functional ground

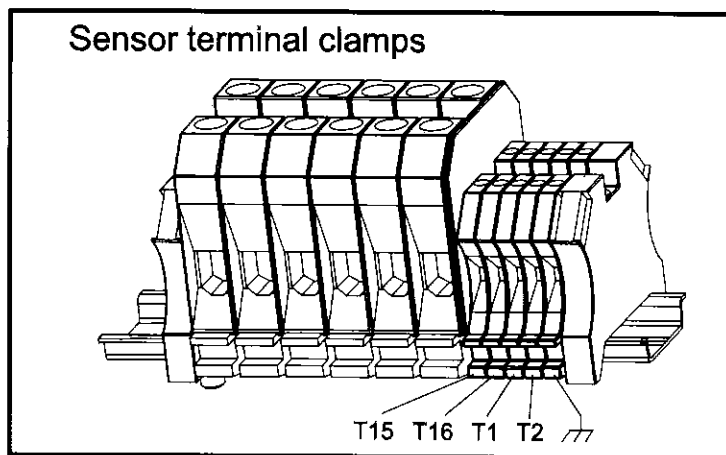
Sensor-connection

Connection to the pump

Color and marking of control leads			
Control	SUBCAB 4GX/7G and Screenflex	SUBCAB AWG	SUBCAB Screened
T1	WH T1	OG	WH T1
T2	WH T2	BU	WH T2
T3	-	-	WH T3
T4	-	-	WH T4

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Figure 18: Color and marking of control leads

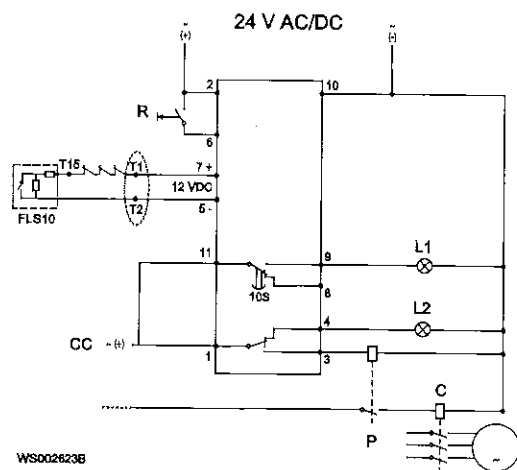


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Figure 19: Sensor terminal clamps

Connection to the monitoring equipment

MiniCAS II



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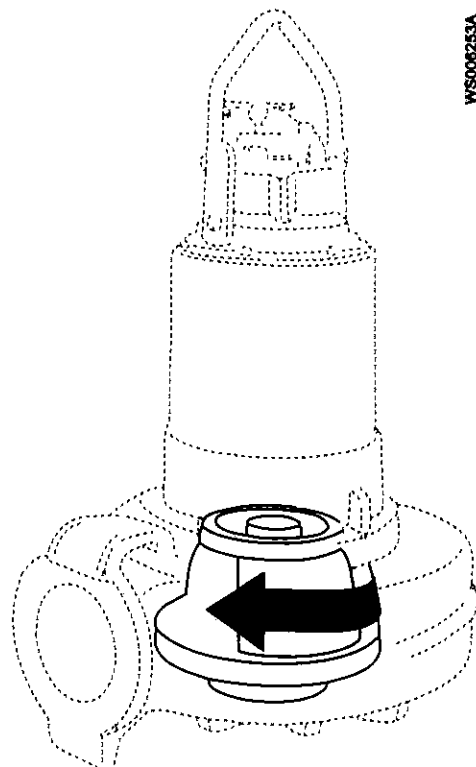
Check the impeller rotation



WARNING:

The starting jerk can be powerful.

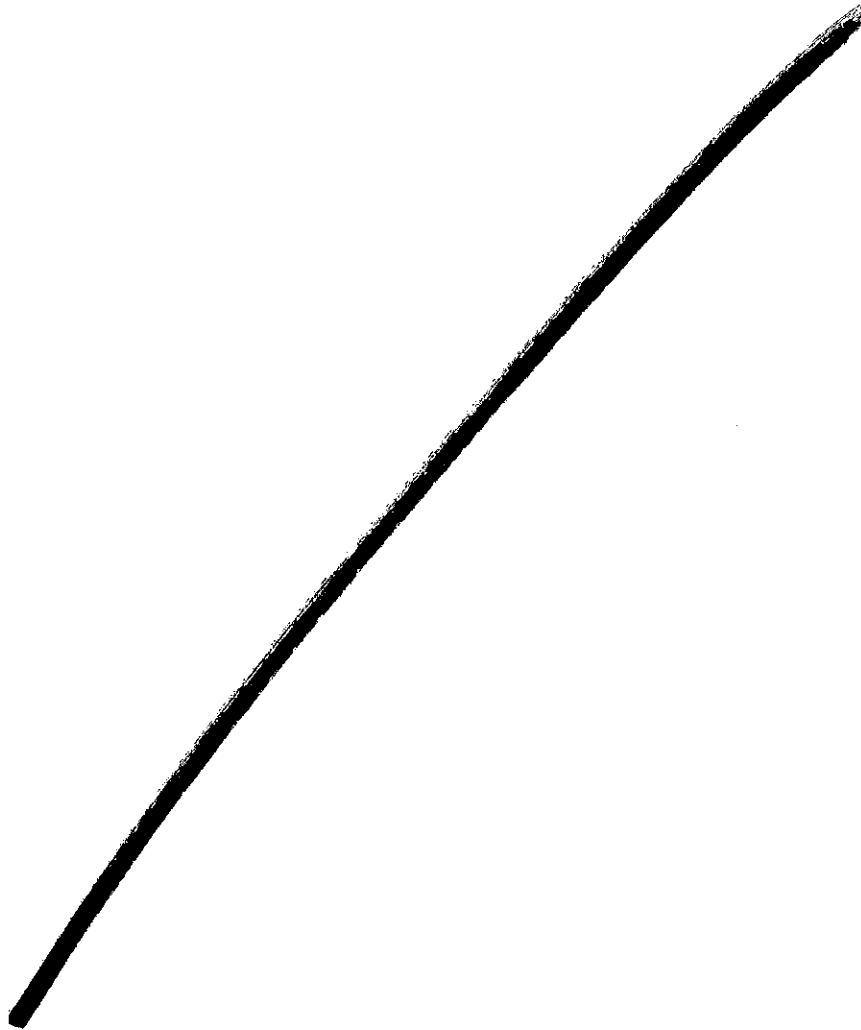
1. Start the motor.
2. Stop the motor after a few seconds.
3. Check that the impeller rotates according to this illustration.



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The correct direction of impeller rotation is clockwise when you look at the pump from above.

4. If the impeller rotates in the wrong direction, transpose two phase leads (3-phase) and do this procedure again.



Operation

Precautions



WARNING:

- Never operate the pump without safety devices installed.
 - Never operate the pump with the discharge valve closed.
 - Make sure you have a clear path of retreat.
 - Never work alone.
-



CAUTION:

If the pump is equipped with automatic level control and/or internal contactor, there is a risk of sudden restart.

Distance to wet areas



Electrical Hazard:

Risk of electrical shock. Make sure no one gets closer than 20 m (65 ft.) to the unit when being in contact with the pumped or mixed liquid.

Noise level

NOTICE:

The noise level of the product is lower than 70 dB. However, the noise level of 70 dB may be exceeded in some installations and at certain operating points on the performance curve. Make sure that you understand the noise level requirements in the environment where the pump is installed. Failure to do so may result in hearing loss or violation of local laws.

Start the pump



Electrical Hazard:

A permanent-magnet motor generates voltage when the shaft is rotating. Ensure that the shaft can not rotate before performing any electrical installation.



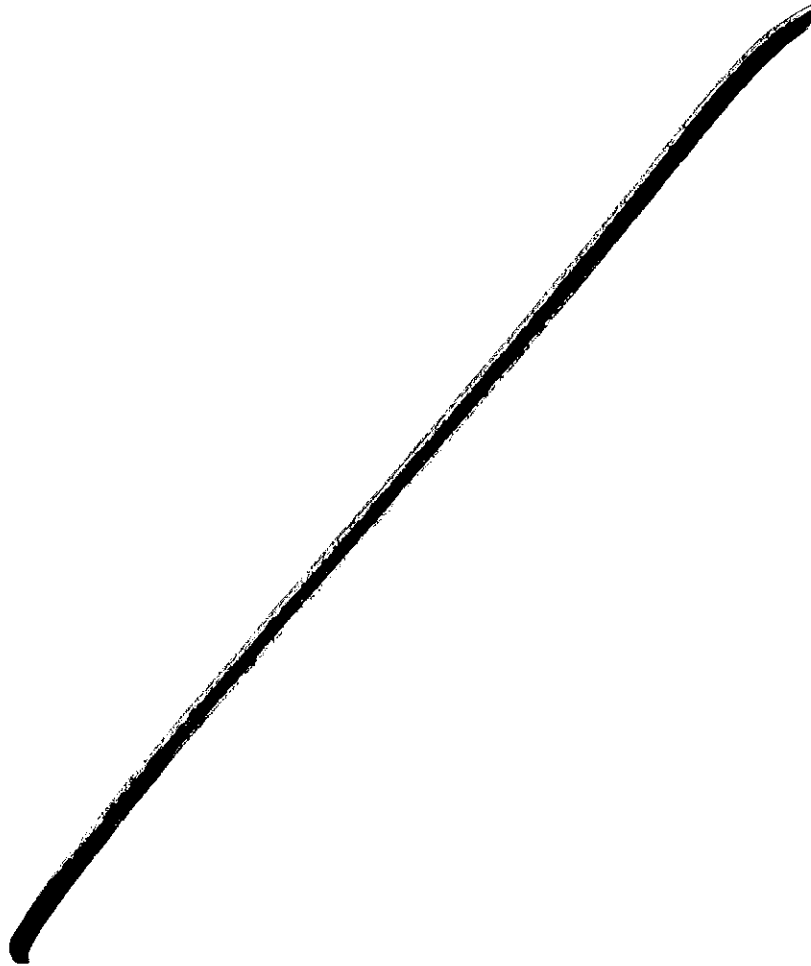
WARNING:

- If you need to work on the pump, make sure that it is isolated from the power supply and cannot be energized.
 - Make sure that the unit cannot roll or fall over and injure people or damage property.
 - In some installations, the pump and the surrounding liquid may be hot. Bear in mind the risk of burn injuries.
 - Make sure nobody is close to the unit when it is started. The unit will jerk in the opposite direction of the impeller rotation.
-

NOTICE:

Make sure that the rotation of the impeller is correct. For more information, see Check the impeller rotation.

1. Remove the fuses or open the circuit breaker, and check that the impeller can be rotated freely.
2. Conduct insulation test phase to ground. To pass, the value must exceed 5 megohms.
3. Check that the monitoring equipment works.
4. Start the pump.



Maintenance

Precautions



WARNING:

- Always follow safety guidelines when working on the product. See *Introduction and Safety* (page 3).
 - Disconnect and lock out electrical power before installing or servicing the pump.
 - Make sure that the unit cannot roll or fall over and injure people or damage property.
 - Rinse the unit thoroughly with clean water before working on the unit.
 - Rinse the components in water after dismantling.
-



WARNING:

Electrical hazard. A permanent magnet motor produces voltage when the shaft is rotating. The conductors must be insulated.



CAUTION:

- Magnetic stray fields may damage cardiac pacemaker and other medical implants. Stay clear of any magnetic stray fields that can occur near an open or disassembled permanent-magnet synchronous motor, or near a separate rotor of such a motor. Keep magnetic media away, including credit cards and watches.
 - Crush hazard during disassembly or assembly of a permanent-magnet synchronous motor. Fingers or other body parts can be trapped and injured. Magnetic items such as tools attracted to the rotor can also cause personal injury.
 - Assembly and disassembly of permanent-magnet synchronous motors must be performed by qualified personnel and according to relevant instructions.
-

Make sure that you follow these requirements:

- Check the explosion risk before you weld or use electrical hand tools.
- Allow all system and pump components to cool before you handle them.
- Make sure that the product and its components have been thoroughly cleaned.
- Do not open any vent or drain valves or remove any plugs while the system is pressurized. Make sure that the pump is isolated from the system and that pressure is relieved before you disassemble the pump, remove plugs, or disconnect piping.
- If the unit has a permanent magnet motor, ensure that you have read and understood all safety instructions regarding permanent magnet motors.

Maintenance guidelines

During maintenance and before reassembly, always remember to perform these tasks:

- Clean all parts thoroughly, particularly O-ring grooves.
- Change all O-rings, gaskets, and seal washers.
- Lubricate all springs, screws, and O-rings with grease.

During reassembly, always make sure that existing index markings are in line.

The reassembled drive unit must always be insulation-tested and the reassembled pump must always be test-run before normal operation.

Torque values

All screws and nuts must be lubricated to achieve correct tightening torque. Screws that are screwed into stainless steel must have the threads coated with suitable lubricants to prevent seizing.

If there is a question regarding the tightening torques, please contact a sales representative.

Screws and nuts

Table 1: Stainless steel, A2 and A4, torque Nm (ft-lbs)

Property class	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
50	1.0 (0.74)	2.0 (1.5)	3.0 (2.2)	8.0 (5.9)	15 (11)	27 (20)	65 (48)	127 (93.7)	220 (162)	434 (320)
70, 80	2.7 (2)	5.4 (4)	9.0 (6.6)	22 (16)	44 (32)	76 (56)	187 (138)	364 (268)	629 (464)	1240 (915)
100	4.1 (3)	8.1 (6)	14 (10)	34 (25)	66 (49)	115 (84.8)	248 (183)	481 (355)	–	–

Table 2: Steel, torque Nm (ft-lbs)

Property class	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
8.8	2.9 (2.1)	5.7 (4.2)	9.8 (7.2)	24 (18)	47 (35)	81 (60)	194 (143)	385 (285)	665 (490)	1310 (966.2)
10.9	4.0 (2.9)	8.1 (6)	14 (10)	33 (24)	65 (48)	114 (84)	277 (204)	541 (399)	935 (689)	1840 (1357)
12.9	4.9 (3.6)	9.7 (7.2)	17 (13)	40 (30)	79 (58)	136 (100)	333 (245)	649 (480)	1120 (825.1)	2210 (1630)

Hexagon screws with countersunk heads

For hexagon socket head screws with countersunk head, maximum torque for all property classes must be 80% of the values for property class 8.8 above.

Change the coolant

This image shows the plugs that are used to change the coolant.

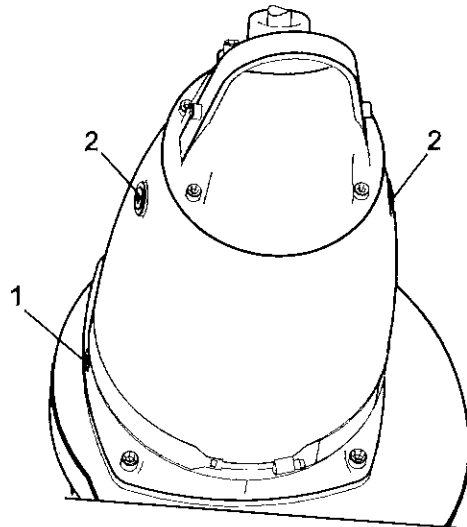


Figure 20: With a cooling jacket

1. Inspection plug
2. Coolant plugs

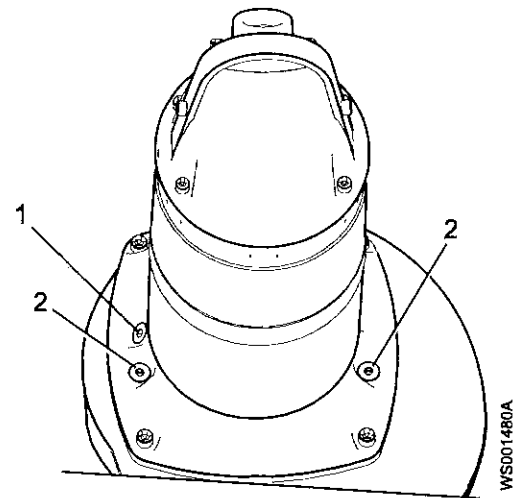


Figure 21: Without a cooling jacket

Empty the coolant



WARNING:

The seal housing may be pressurized. Hold a rag over the inspection/ filling plugs to prevent splatter.

1. Empty the coolant in the inspection chamber:
 - a) Remove the inspection plug.

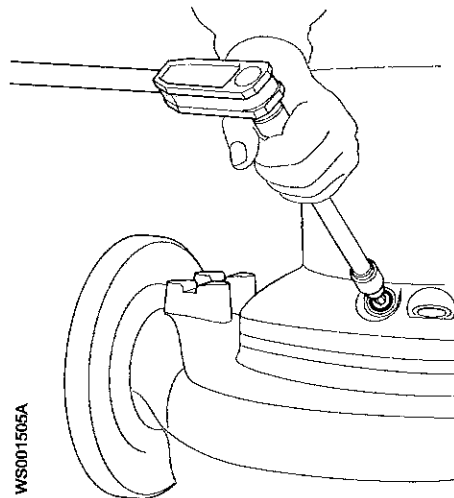


Figure 22: Without a cooling jacket

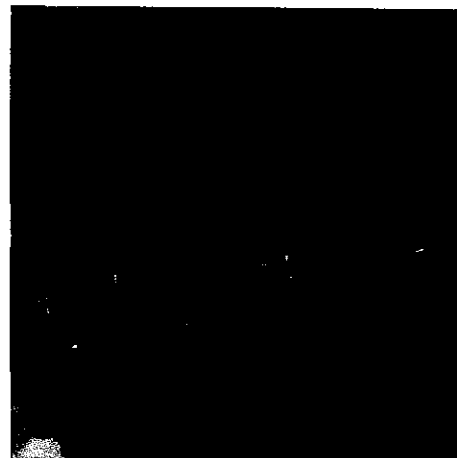
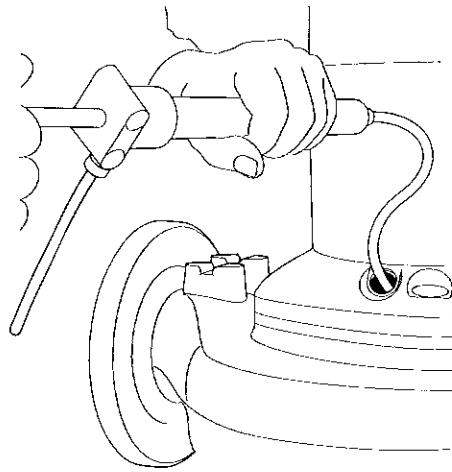


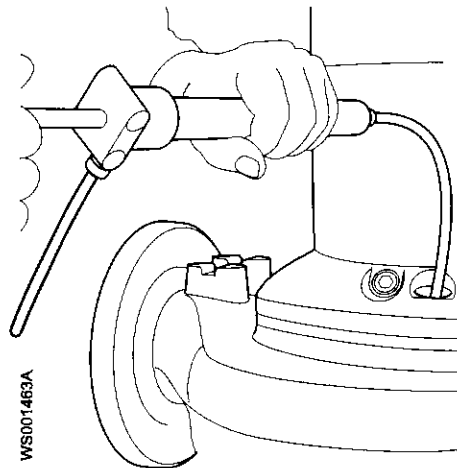
Figure 23: With a cooling jacket

- b) Pump out any coolant from the inspection chamber, as shown here.



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- c) Replace the inspection plug and O-ring and tighten.
Tightening torque: 44 Nm (33 ft-lbs)
- 2. Empty the coolant:
 - a) Place the pump in a horizontal position, or leave it upright to use a pump to empty the coolant.



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- b) If the pump is laid in a horizontal position, place a container under the pump.
 - c) Remove the coolant plugs and empty the coolant.

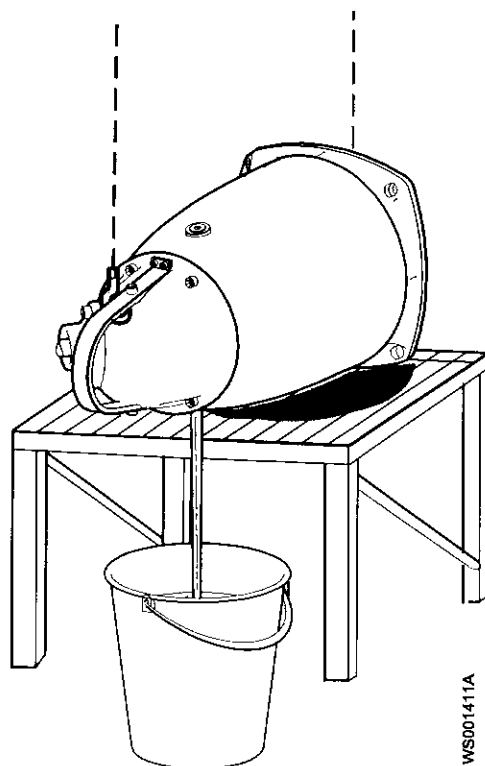


Figure 24: With a cooling jacket

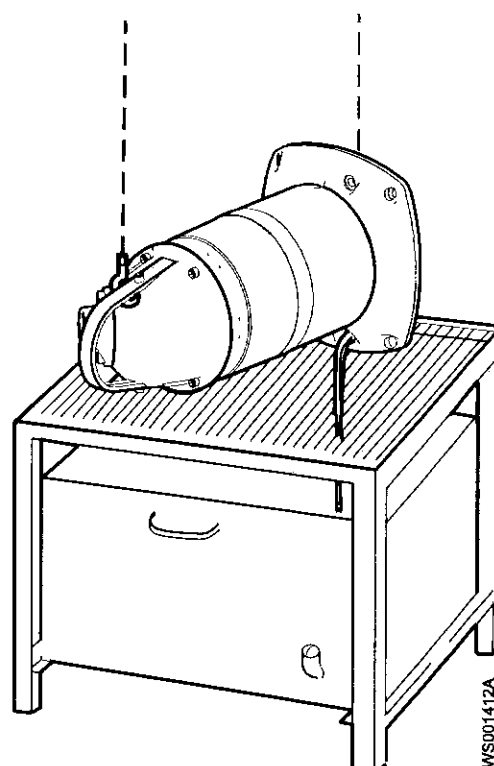


Figure 25: Without a cooling jacket

Fill with coolant

Use a coolant that is a mixture of 70% water and 30% monopropylene glycol. The coolant should prevent corrosion and be nonpoisonous (generally recognized as safe by the FDA as food additives under part 184 and 182).

NOTICE:

Clean water with an anti-corrosive is an acceptable coolant when there is no risk of freezing.

1. Fill with coolant until it overflows through the opposite hole, as shown here.
Quantity: approximately
 - 2.2 L (2.3 qt.) without cooling jacket
 - 10.5 L (11.2 qt.) with cooling jacket

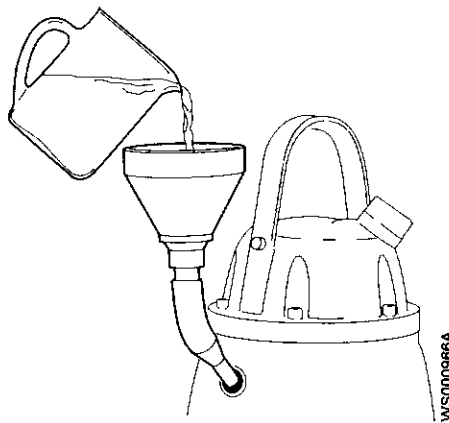


Figure 26: With cooling jacket

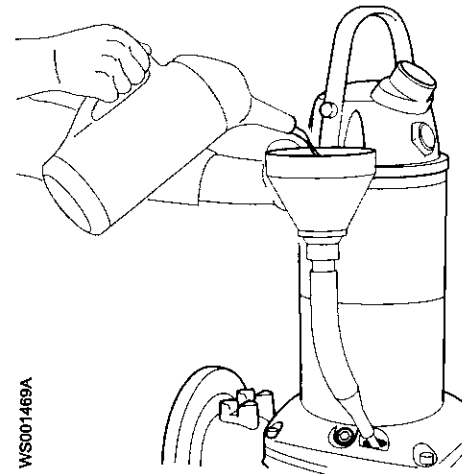


Figure 27: Without cooling jacket

2. Replace the O-rings.
 3. Tighten the coolant plugs.
- Tightening torque: 44 Nm (33 ft-lbs)

Service the pump

Type of service	Purpose	Inspection interval
Initial inspection	To make a check up of the pump condition by an authorized Xylem service representative and, based on the result and findings from these measures, to determine the intervals for periodical inspection and major overhaul for the specific installation.	Within the first year of operation.
Periodical inspection	To prevent operational interruptions and machine breakdown. Measures to secure performance and pump efficiency are defined and decided for each individual application. It can include such things as impeller trimming, wear part control and replacement, control of zinc anodes and control of the stator.	Up to 12,000 hours or 3 years, whichever comes first. Applies to normal applications and operating conditions at media (liquid) temperatures <40°C.
Major overhaul	To secure a long operating lifetime for the product. It includes replacement of key components and the measures taken during an inspection.	Up to 24,000 hours or 6 years, whichever comes first. Applies to normal applications and operating conditions at media (liquid) temperatures <40°C.

NOTICE:

Shorter intervals may be required when the operating conditions are extreme, for example with very abrasive or corrosive applications or when the liquid temperatures exceed 40°C (104°F).

Inspection

Service item	Action
Cable	<ol style="list-style-type: none"> 1. If the outer jacket is damaged, replace the cable. 2. Check that the cables do not have any sharp bends and are not pinched.
Connection to power	Check that the connections are properly tightened.
Electrical cabinets	Check that they are clean and dry.
Impeller	<ol style="list-style-type: none"> 1. Check the impeller clearance. 2. Adjust the impeller, if necessary.
Inspection chamber	<ol style="list-style-type: none"> 1. Drain all liquid, if any. 2. Check the resistance of the leakage sensor. Normal value approx. 1200 ohms, alarm approx. 430 ohms.
Insulation	<p>Use a megger maximum 1000 V.</p> <ol style="list-style-type: none"> 1. Check that the resistance between the earth (ground) and phase lead is more than 5 megohms. 2. Conduct a phase-to-phase resistance check.
Junction box	Check that it is clean and dry.
Level regulators	Check the condition and functionality.
Lifting device	Check that local safety regulations are followed.
Lifting handle	<ol style="list-style-type: none"> 1. Check the screws. 2. Check the condition of the lifting handle. 3. Replace if necessary.
O-rings	<ol style="list-style-type: none"> 1. Replace the oil plug O-rings. 2. Replace the O-rings at the entrance or junction cover. 3. Grease the new O-rings.
Overload protection and other protections	Check the correct settings.
Personnel safety devices	Check the guard rails, covers, and other protections.
Rotation direction	Check the impeller rotation.
Seal housing	<ol style="list-style-type: none"> 1. Fill with new coolant, if necessary. 2. Check that the freezing point is lower than -13°C (9°F).
Terminal board	Check that the connections are properly tightened.
Thermal contacts	Normally closed circuit; interval 0-1 ohm.
Thermistor	Check the resistance is between 20-250 ohms and the measured voltage is maximum 2 V DC.
Voltage and amperage	Check the running values.

Major overhaul

For a major overhaul, take this action in addition to the tasks listed under Inspection.

Service item	Action
Support and main bearing	Replace the bearings with new bearings.
Mechanical seal	Replace with new seal units.

Service in case of alarm

For information about indication values for sensors, see [Sensor-connection](#) (page 31).

Alarm source	Action
FLS10	<ol style="list-style-type: none"> 1. Drain the fluid in the inspection chamber. Fill with new coolant if necessary. 2. Check the freezing point (lower than -13°C or 9°F). Check the inspection chamber again after one week of operation. If leakage has occurred: <ol style="list-style-type: none"> 1. Drain the fluid. 2. Change the mechanical seal unit. 3. Replace with new coolant.
The thermistor/Thermal contact	<ol style="list-style-type: none"> 1. Check the coolant level (pump with cooling jacket). 2. Check the start and stop levels.
The overload protection	Check that the impeller can rotate freely.

Replace the impeller

Required tools:

- 12 mm hexagon bit adapter with an extension of at least a 100 mm (4 in.)
- Rod (wood or plastic) for locking the impeller in place.



WARNING:

- If you fail with the impeller installation, you must redo the installation procedure from the beginning.
- A worn impeller and/or pump housing can have very sharp edges. Wear protective gloves.
- When laying the pump on its side, do not allow the weight of the pump to rest on any portion of the impeller. The impeller must not be allowed to make contact with the concrete floor or other hard and rough surfaces.

Replace the impeller for wet installation

Remove the impeller: wet installation

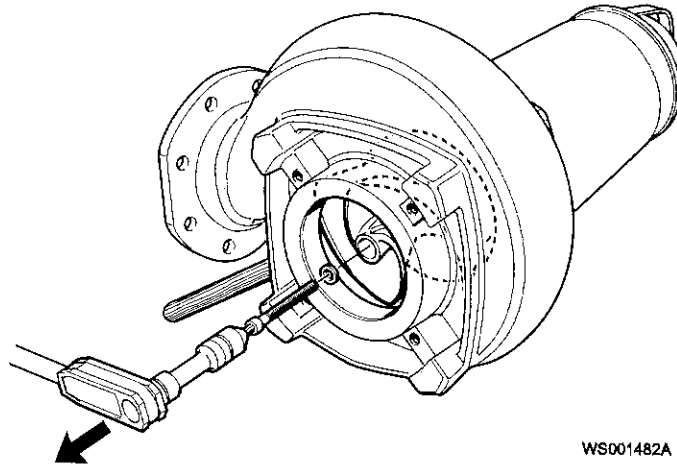


CAUTION:

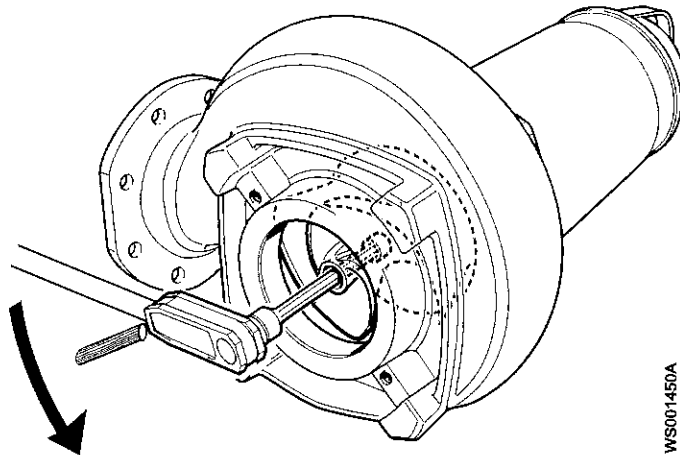
Wear heavy work gloves when you handle impellers. The sharp edges can cause physical injury.

1. Place the pump in a horizontal position.
2. Remove the impeller:

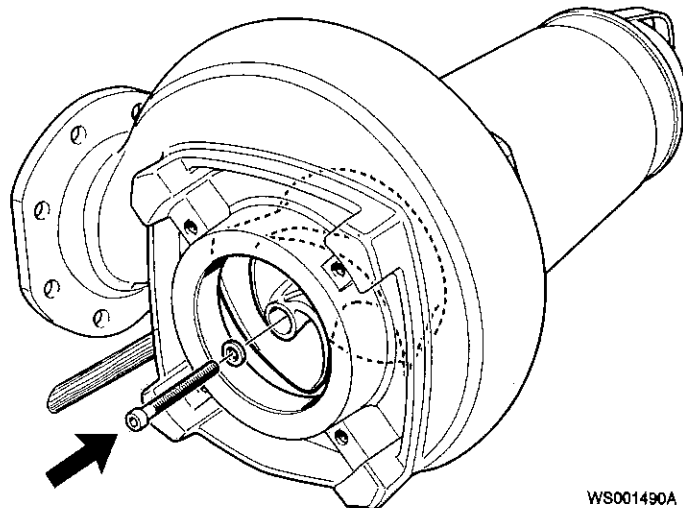
- a) Remove the flush valve cover and its O-ring.
- b) Lock the impeller in place by inserting a rod through the hole.
- c) Remove the impeller screw.



- d) Turn the adjustment screw counterclockwise until the impeller breaks free from the shaft.

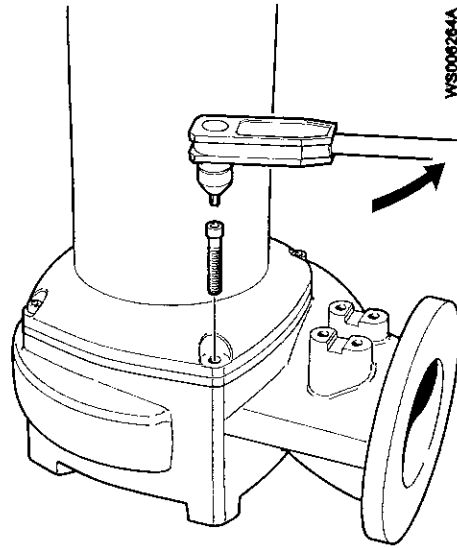


- e) Hand-tighten the impeller screw to prevent it from falling off.

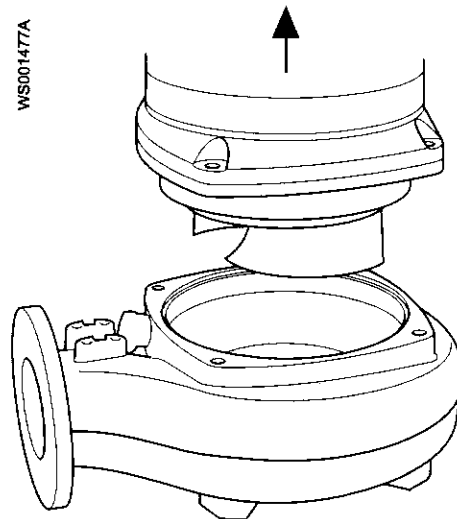


- f) Remove the rod.
3. Raise the pump.
4. Remove the drive unit from the pump housing:

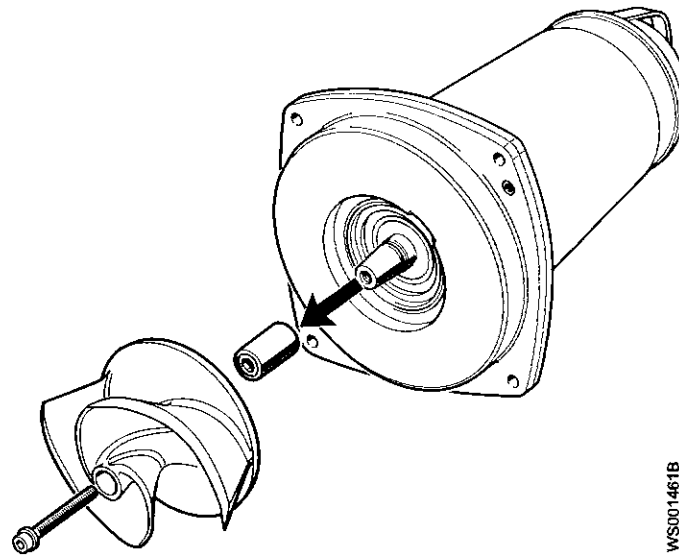
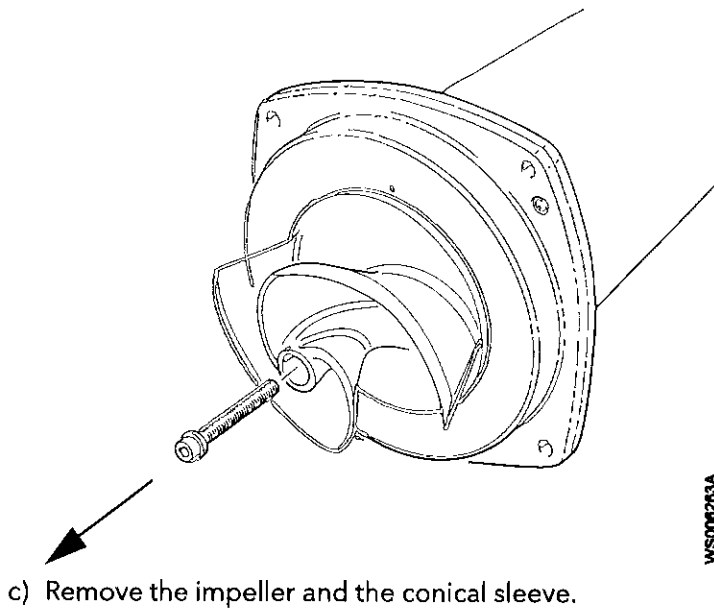
- a) Remove the pump housing screws.



- b) Remove the drive unit from the pump housing.



5. Remove the impeller:
 - a) Place the drive unit horizontally.
 - b) Remove the impeller screw.

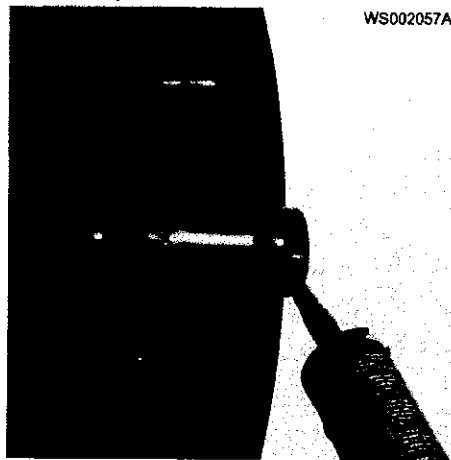


Install the impeller: wet installation

1. Mount the impeller:
 - a) Make sure that the end of the shaft is free from burrs.
Polish off any flaws with a fine emery cloth.
 - b) Grease the shaft end.

NOTICE:

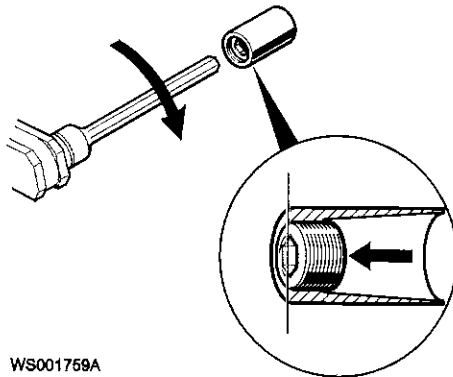
Surplus grease can cause the impeller to become loose. Remove surplus grease from conical and/or cylindrical surfaces of shafts and/or sleeves.



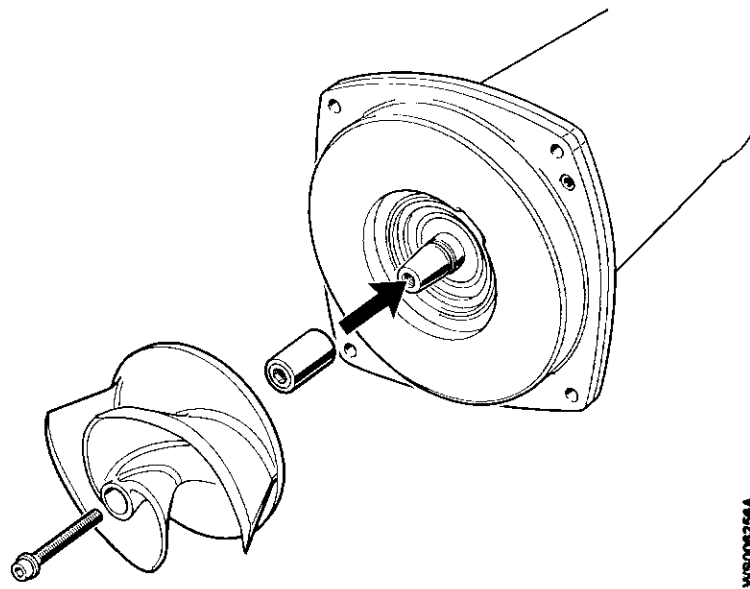
- c) Grease the conical sleeve, the threads of the adjustment screw, the washer, and the impeller screw.
Always use a new impeller screw.



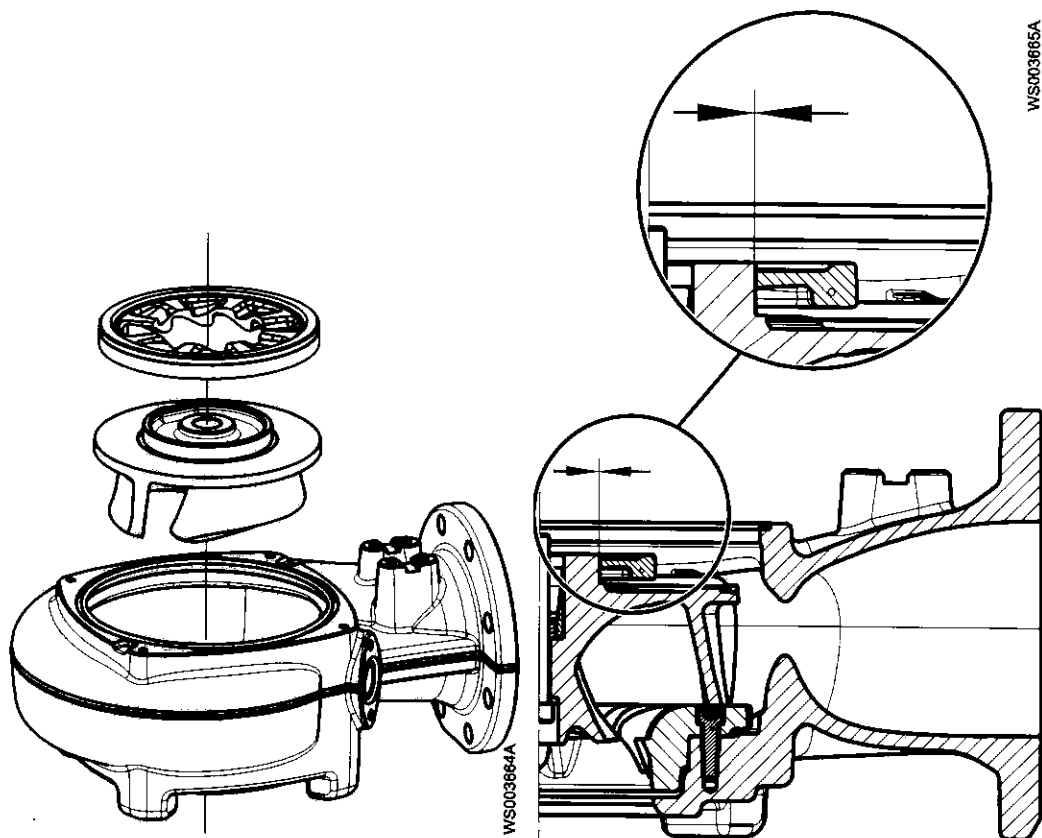
- d) Adjust the adjustment screw so that it is flush with the sleeve.



- e) Fit the sleeve and impeller to the shaft.
f) Hand-tighten the impeller screw to prevent it from falling off.

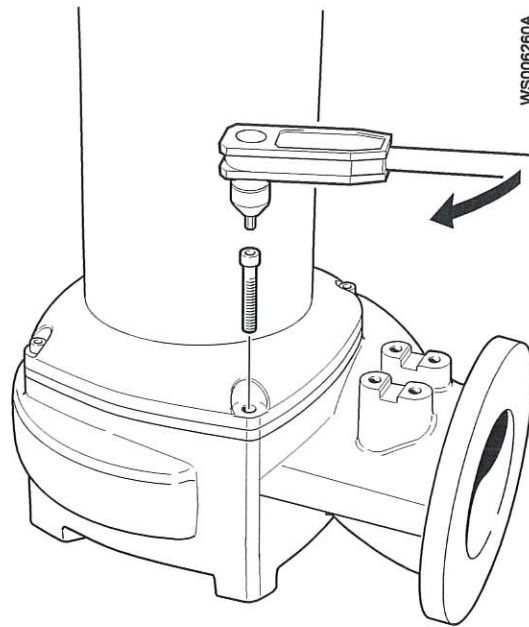


2. If applicable, check that the clearance between the impeller and the insert ring is maximum 1 mm (0.04 in.) radial. If not, send the pump for service. The insert ring is pressed into the seal housing cover.

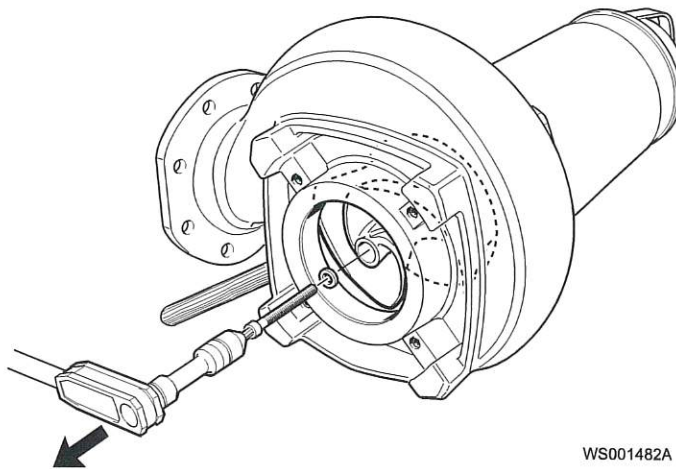


3. Fit the pump housing:
- Fit a new and greased O-ring on the seal housing cover.
 - Grease the pump housing screws.
 - Raise the drive unit.
 - Place the drive unit into the pump housing.

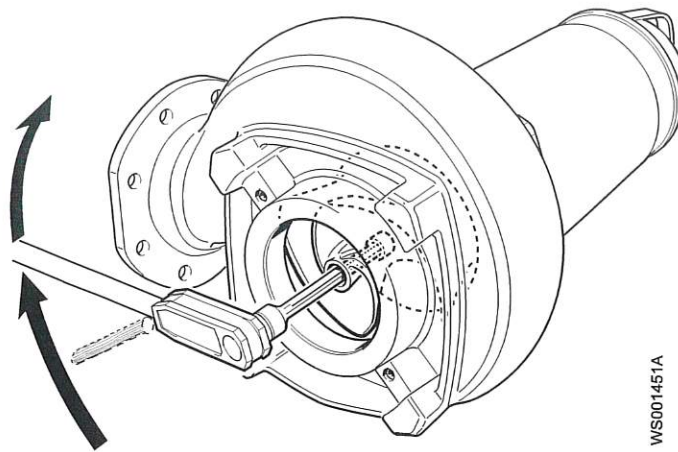
- e) Adjust its position so that the inspection hole is on the same side as the flush valve.
- f) Tighten the screws in diagonal sequence.
For tightening torque, see *Torque values* (page 38).



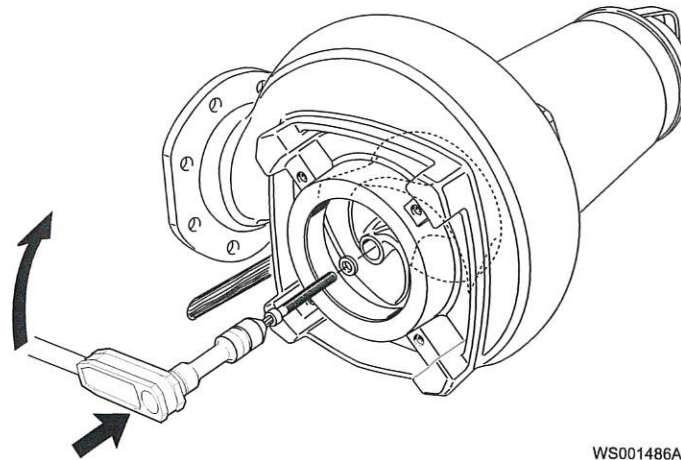
- 4. Remove the impeller screw:
 - a) Place the pump horizontally.
 - b) Lock the impeller in place by inserting a rod through the hole.
 - c) Remove the impeller screw and the washer.



- 5. Adjust the impeller:
 - a) Using a hexagon-bit adapter, turn the adjustment screw clockwise until the impeller makes contact with the pump housing.
For tightening torque, see *Torque values* (page 38).
 - b) Tighten it a further 1/8 turn (45°).



6. Fasten the impeller:
- Fit the greased washer and impeller screw.
 - Tighten the impeller screw.
For tightening torque, see [Torque values](#) (page 38).
 - Tighten it a further 1/8 turn (45°).

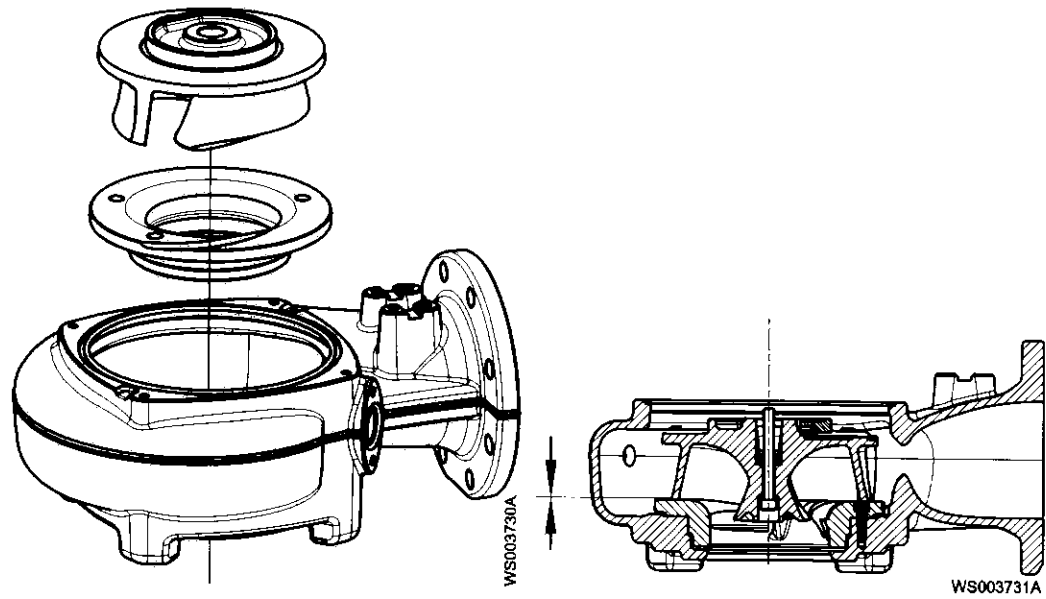


- Remove the rod used to lock the impeller.
- Fit the O-ring and flush valve cover and fasten it with screws.
For tightening torque, see [Torque values](#) (page 38).
- Check that the impeller can rotate freely.

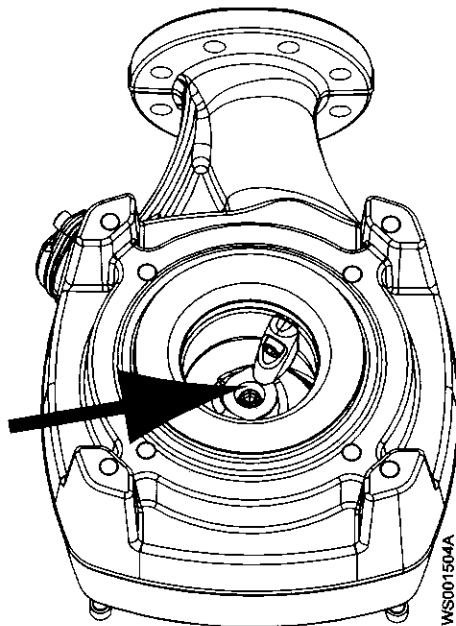
**CAUTION:**

Beware of the pinch point hazard between the rotating impeller and the guide pin.

7. Check that the clearance between the impeller and the insert ring is 0.1–0.5 mm (0.004–0.02 in.).



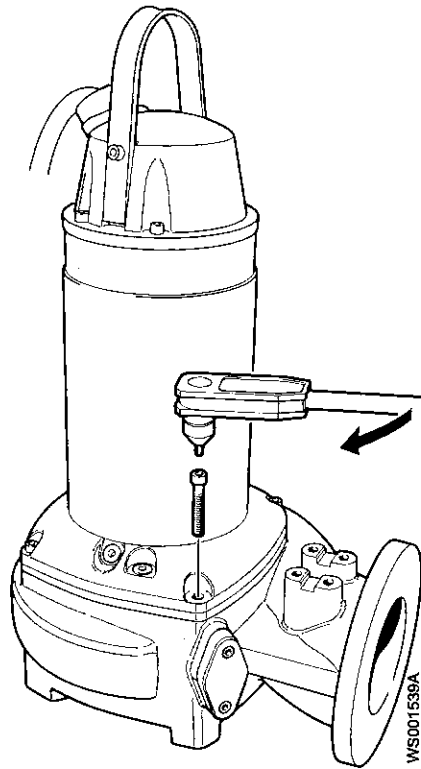
8. If applicable, adjust clearance to 0.1-0.5 mm (0.004-0.02 in.) between the guide pin and the impeller.



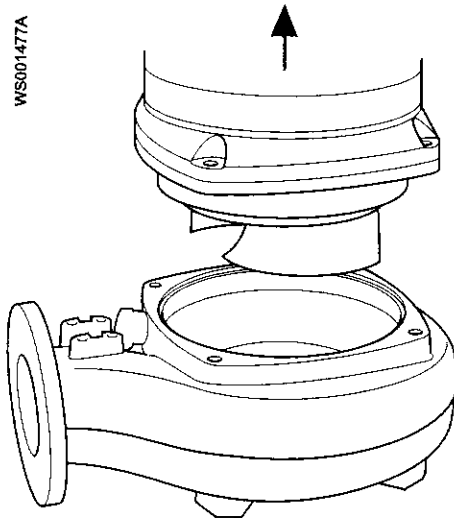
Replace the impeller for dry installation

Remove the impeller: dry installation

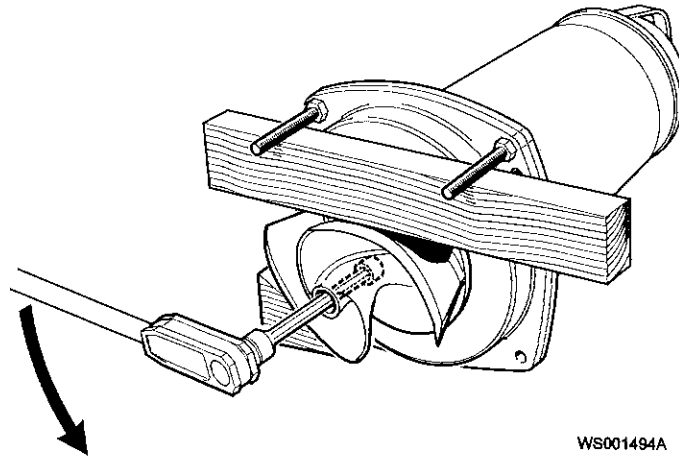
1. Remove the drive unit from the pump housing:
 - a) Remove the pump housing screws.



b) Remove the drive unit from the pump housing.

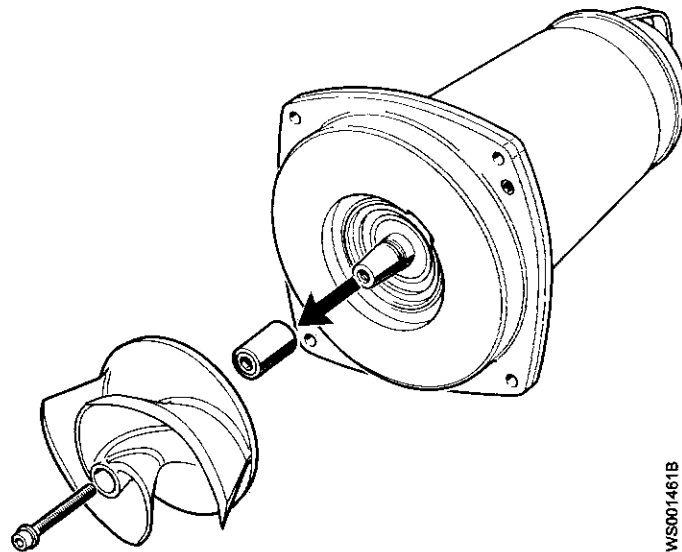


2. Remove the impeller:
 - a) Place the drive unit horizontally.
 - b) Lock the impeller as shown in the figure.
 - c) Remove the impeller screw.



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- d) Turn the adjustment screw counterclockwise until the impeller breaks free from the shaft.
- e) Remove the impeller and the conical sleeve.



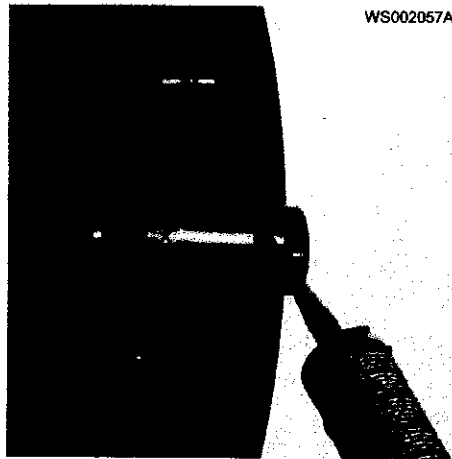
WS001461B

Install the impeller: dry installation

- 1. Prepare the sleeve:
 - a) Make sure that the end of the shaft is free from burrs.
Polish off any flaws with a fine emery cloth.
 - b) Grease the shaft end.

NOTICE:

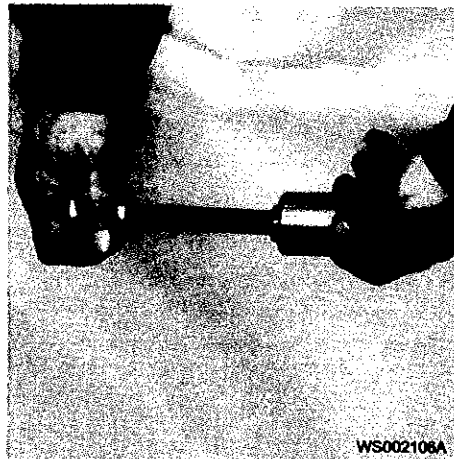
Surplus grease can cause the impeller to become loose. Remove surplus grease from conical and/or cylindrical surfaces of shafts and/or sleeves.



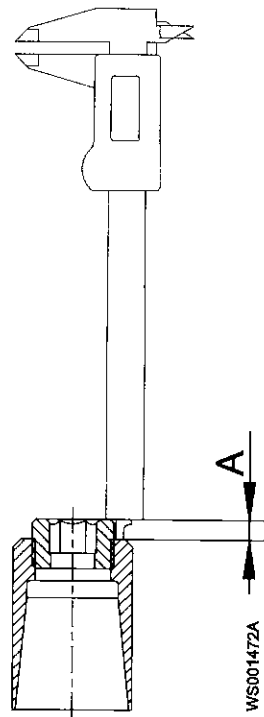
- c) Grease the conical sleeve, the threads of the adjustment screw, the washer, and the impeller screw.
Always use a new impeller screw.



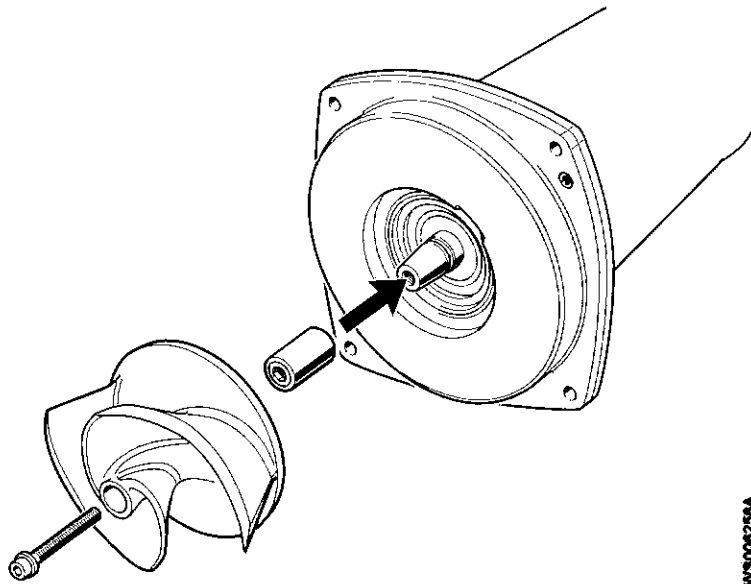
- d) Unscrew the adjustment screw approximately 5 mm (0.2 in.).



- e) Measure and note the distance A.

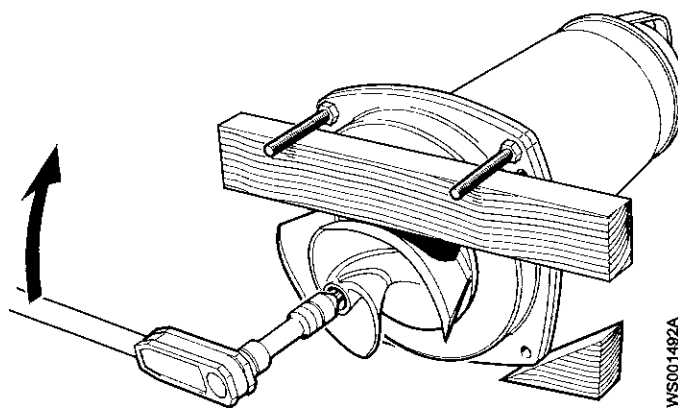


2. Mount the impeller:
 - a) Fit the sleeve and the impeller to the shaft.



- b) Fit the impeller screw and washer and tighten.

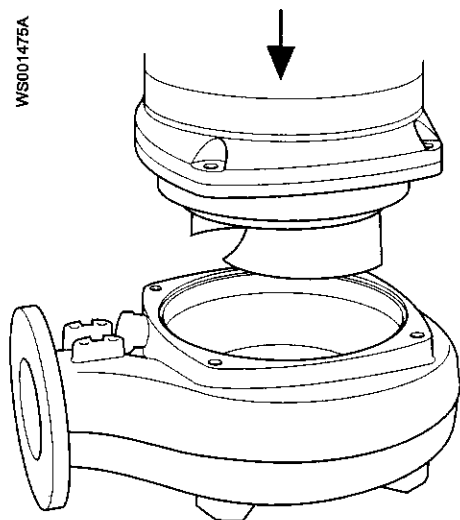
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3. Make sure that the O-ring is removed from the seal housing cover.



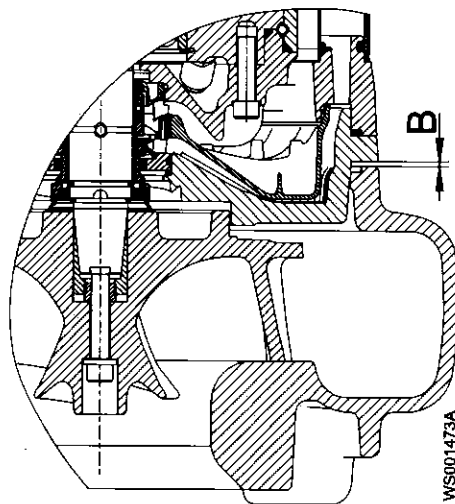
4. Measure the trim distance:
- a) Place the drive unit in the pump housing.
Make sure that the drive unit is parallel with the pump housing by hand-tightening the pump housing screws.



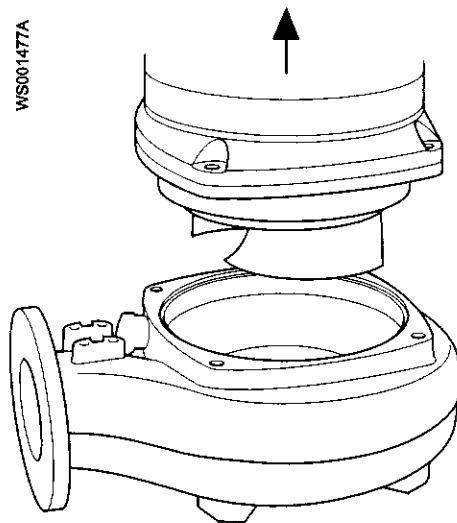
- b) Check the distance between the seal housing cover and the pump housing with a feeler gauge.
Check diagonally at four points.



c) Note the largest distance B.

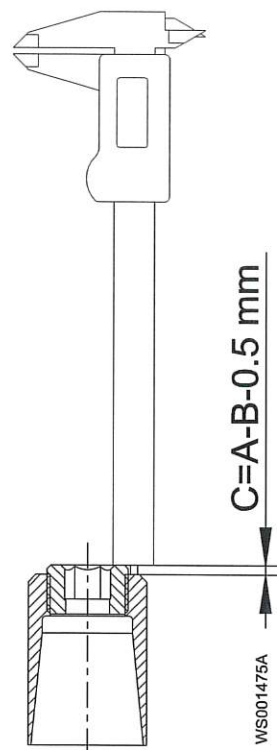


d) Lift the drive unit out of the pump housing and remove the impeller and conical sleeve.

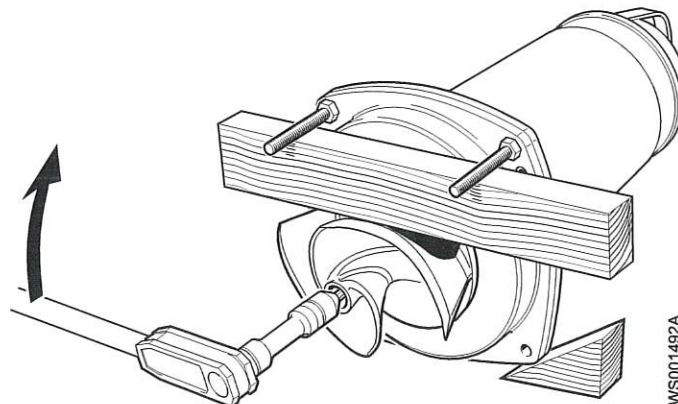


5. Trim to the correct distance:

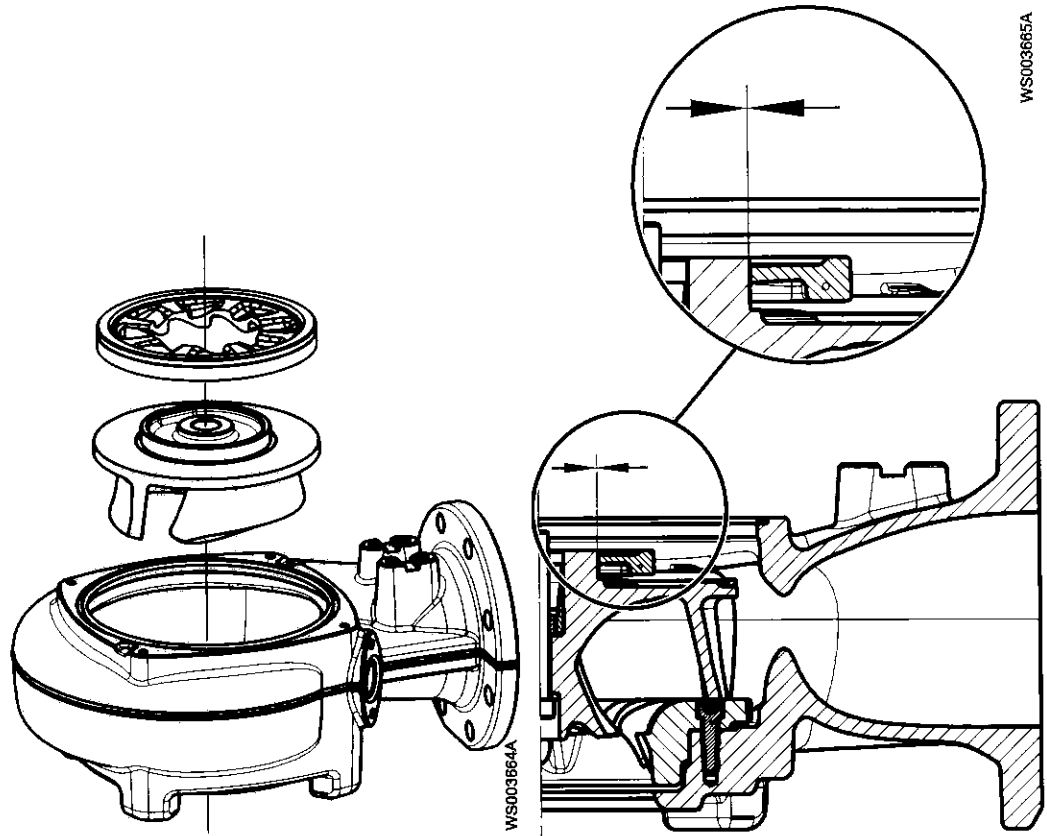
a) Calculate the measure C according to the formula shown in the image.



- b) Turn the adjustment screw until C is reached.
6. Fasten the impeller:
- a) Fit the sleeve, impeller, greased washer with a greased impeller screw.
 - b) Tighten the impeller screw.
For tightening torque, see *Torque values* (page 38).
 - c) Tighten it further 1/8 turn (45°).



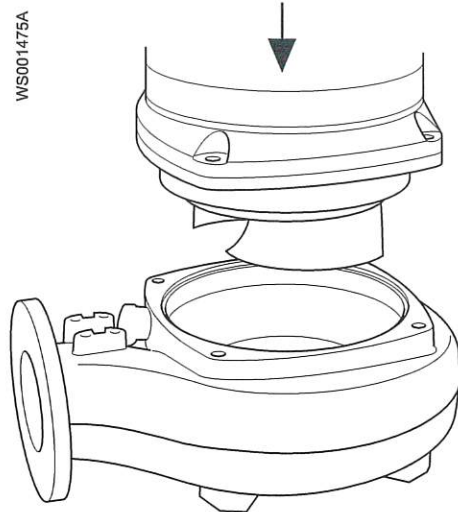
7. If applicable, check that the clearance between the impeller and the insert ring is maximum 1 mm (0.04 in.) radial. If not, send the pump for service.
The insert ring is pressed into the seal housing cover.



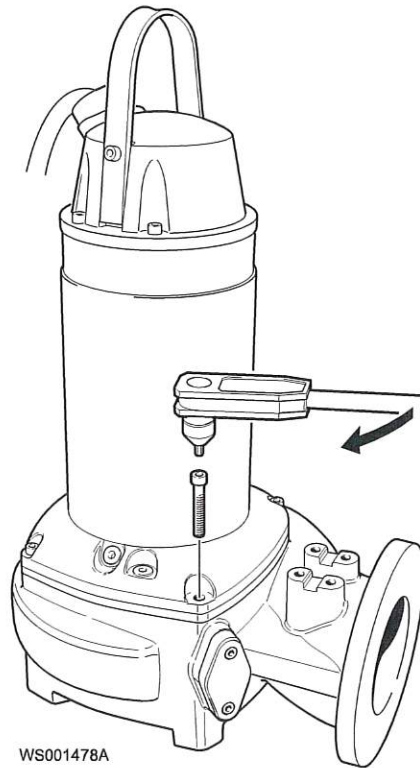
8. Install the drive unit in the pump housing:
 - a) Fit a new and greased O-ring to the seal housing cover.



- b) Place the drive unit in the pump housing.



- c) Adjust the position of the drive unit so that the inspection hole is on the same side as the flush valve.
- d) Tighten the greased screws diagonally.
For tightening torque, see [Torque values](#) (page 38).



If you need to adjust the impeller, redo the replace the impeller procedure from the beginning.

Troubleshooting

Introduction

Follow these guidelines when troubleshooting the pump:

- Disconnect and lock out the power supply except when conducting checks that require voltage.
- Make sure that no one is near the pump when the power supply is reconnected.
- When troubleshooting electrical equipment, use the following:
 - Universal instrument multimeter
 - Test lamp (continuity tester)
 - Wiring diagram

The pump does not start



WARNING:

Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.



WARNING:

Electrical hazard. A permanent magnet motor produces voltage when the shaft is rotating. The conductors must be insulated.

NOTICE:

Do NOT override the motor protection repeatedly if it has tripped. Doing so may result in equipment damage.

Cause	Remedy
An alarm signal has been triggered on the control panel.	Check that: <ul style="list-style-type: none"> • The impeller rotates freely. • The sensor indicators do not indicate an alarm. • The overload protection is not tripped. If the problem still persists: Contact the local Xylem service shop.
The pump does not start automatically, but can be started manually.	Check that: <ul style="list-style-type: none"> • The start level regulator is functioning. Clean or replace if necessary. • All connections are intact. • The relay and contactor coils are intact. • The control switch (Man/Auto) makes contact in both positions. Check the control circuit and functions.
The installation is not receiving voltage.	Check that: <ul style="list-style-type: none"> • The main power switch is on. • There is control voltage to the start equipment. • The fuses are intact. • There is voltage in all phases of the supply line.

Cause	Remedy
	<ul style="list-style-type: none"> • All fuses have power and that they are securely fastened to the fuse holders. • The overload protection is not tripped. • The motor cable is not damaged.
The impeller is stuck.	Clean: <ul style="list-style-type: none"> • The impeller • The sump in order to prevent the impeller from clogging again.

If the problem persists, refer to the Flygt Service Guide on the web or contact the local Xylem service shop. Always state the serial number of your pump when you contact Xylem, see [Product Description](#) (page 12).

The pump does not stop when a level sensor is used



WARNING:

Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.



WARNING:

Electrical hazard. A permanent magnet motor produces voltage when the shaft is rotating. The conductors must be insulated.

Cause	Remedy
The pump is unable to empty the sump to the stop level.	Check that: <ul style="list-style-type: none"> • There are no leaks from the piping and/or discharge connection. • The impeller is not clogged. • The non-return valve(s) are functioning properly. • The pump has adequate capacity. For information: Contact the local Xylem service shop.
There is a malfunction in the level-sensing equipment.	<ul style="list-style-type: none"> • Clean the level regulators. • Check the functioning of the level regulators. • Check the contactor and the control circuit. • Replace all defective items.
The stop level is set too low.	Raise the stop level.

If the problem persists, refer to the Flygt Service Guide on the web or contact the local Xylem service shop. Always state the serial number of your pump when you contact Xylem, see [Product Description](#) (page 12).

The pump starts-stops-starts in rapid sequence

Cause	Remedy
The pump starts due to back-flow which fills the sump to the start level again.	Check that:

Cause	Remedy
	<ul style="list-style-type: none"> • The distance between the start and stop levels is sufficient. • The non-return valve(s) work(s) properly. • The length of the discharge pipe between the pump and the first non-return valve is sufficiently short.
The self-holding function of the contactor malfunctions.	<p>Check:</p> <ul style="list-style-type: none"> • The contactor connections. • The voltage in the control circuit in relation to the rated voltages on the coil. • The functioning of the stop-level regulator. • Whether the voltage drop in the line at the starting surge causes the contactor's self-holding malfunction.

If the problem persists, refer to the Flygt Service Guide on the web or contact the local Xylem service shop. Always state the serial number of your pump when you contact Xylem, see [Product Description](#) (page 12).

The pump runs but the motor protection trips



WARNING:

Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.



WARNING:

Electrical hazard. A permanent magnet motor produces voltage when the shaft is rotating. The conductors must be insulated.

NOTICE:

Do NOT override the motor protection repeatedly if it has tripped. Doing so may result in equipment damage.

Cause	Remedy
The motor protection is set too low.	Set the motor protection according to the data plate and if applicable the cable chart.
The impeller is difficult to rotate by hand.	<ul style="list-style-type: none"> • Clean the impeller. • Clean out the sump. • Check that the impeller is properly trimmed.
The drive unit is not receiving full voltage on all three phases.	<ul style="list-style-type: none"> • Check the fuses. Replace fuses that have tripped. • If the fuses are intact, notify a certified electrician.
The phase currents vary, or they are too high.	Contact the local Xylem service shop.

Cause	Remedy
The insulation between the phases and ground in the stator is defective.	<ol style="list-style-type: none"> 1. Use an insulation tester. With a 1000 V DC megger, check that the insulation between the phases and between any phase and ground is > 5 megohms. 2. If the insulation is less: Contact the local Xylem service shop.
The density of the pumped fluid is too high.	<p>Make sure that the maximum density is 1100 kg/m³ (9.2 lb/US gal)</p> <ul style="list-style-type: none"> • Change the impeller, or • Change to a more suitable pump. • Contact the local Xylem service shop.
There is a malfunction in the overload protection.	Replace the overload protection.

If the problem persists, refer to the Flygt Service Guide on the web or contact the local Xylem service shop. Always state the serial number of your pump when you contact Xylem, see [Product Description](#) (page 12).

The pump delivers too little or no water



WARNING:

Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.



WARNING:

Electrical hazard. A permanent magnet motor produces voltage when the shaft is rotating. The conductors must be insulated.

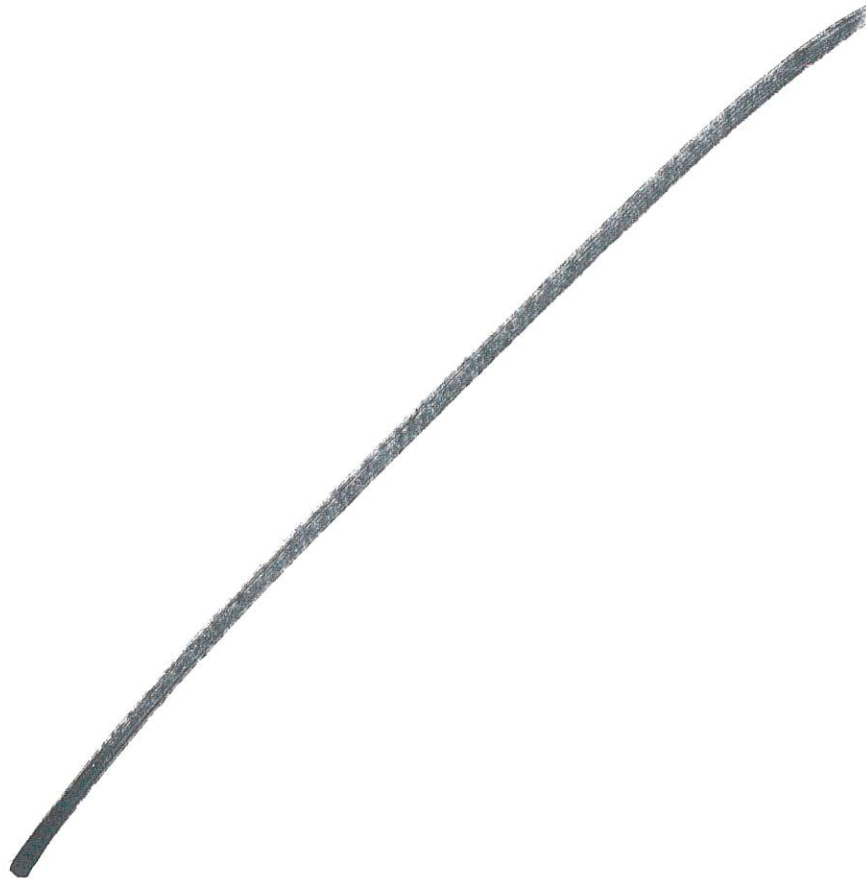
NOTICE:

Do NOT override the motor protection repeatedly if it has tripped. Doing so may result in equipment damage.

Cause	Remedy
The impeller rotates in the wrong direction.	<ul style="list-style-type: none"> • If it is a 3-phase pump, transpose two phase leads. • If it is a 1-phase pump: Contact the local Xylem service shop.
One or more of the valves are set in the wrong positions.	<ul style="list-style-type: none"> • Reset the valves that are set in the wrong position. • Replace the valves, if necessary. • Check that all valves are correctly installed according to media flow. • Check that all valves open correctly.
The impeller is difficult to rotate by hand.	<ul style="list-style-type: none"> • Clean the impeller. • Clean out the sump. • Check that the impeller is properly trimmed.
The pipes are obstructed.	Clean out the pipes to ensure a free flow.
The pipes and joints leak.	Find the leaks and seal them.

Cause	Remedy
There are signs of wear on the impeller, pump, and casing.	Replace the worn parts.
The liquid level is too low.	<ul style="list-style-type: none"> • Check that the level sensor is set correctly. • Depending on the installation type, add a means for priming the pump, such as a foot valve.

If the problem persists, refer to the Flygt Service Guide on the web or contact the local Xylem service shop. Always state the serial number of your pump when you contact Xylem, see [Product Description](#) (page 12).



Technical Reference

Application limits

Data	Description
Liquid temperature	40°C (104°F) maximum For P- and S-installations without cooling jacket, the pump can be operated only when the sump level is at least 10 mm above the stator housing. Warm-liquid version (only with cooling jacket): 70°C (158°F) maximum Ex-approved pumps: 40°C (104°F) maximum
Liquid density	1100 kg/m ³ (9.2 lb per US gal) maximum
pH of the pumped media (liquid)	5.5–14
Depth of immersion	20 m (65 ft) maximum
Other	For the specific weight, current, voltage, power ratings, and speed of the pump, see the data plate of the pump.

Motor data

Feature	Description
Motor type	<ul style="list-style-type: none"> 3153.091/.095/.181/.185/.350/.390: Squirrel-cage induction motor 3153.800/.810/.820/.830/.840/.850: Line-started, permanent-magnet synchronous motor
Frequency	50 or 60 Hz
Supply	3-phase
Starting method	<ul style="list-style-type: none"> Direct on-line Star-delta Soft starter
Maximum starts per hour	30 evenly spaced starts per hour
Code compliance	IEC 60034-1
Rated output variation	±10%
Voltage variation without overheating	±10%, provided that it does not run continuously at full load
Voltage imbalance tolerance	2%
Stator insulation class	H (180°C [360°F])

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,500 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com



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Visit our Web site for the latest version of this document and more information

The original instruction is in English. All non-English instructions are translations of the original instruction.

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Storm Water Quality Control Criteria Plan

For

Project Sanchez

6001 Austin Road
Stockton, CA 95215

Date Revised: December 16, 2020

Prepared For:

ET Stockton Owner, LLC c/o CT Realty

Attn: James G. Koman, Manager
120 S. Central Avenue, Suite 300
St. Louis, MO 63105
Phone 314.261.7348

Prepared By:



KIER+WRIGHT

2850 Collier Canyon Rd.
Livermore, CA 94551
Phone 925.245.8788

Storm Water Quality Control Plan
for
6001 Austin Road
Stockton, CA 95215

Date: December 16, 2020

Project Manager: Adam Mahoney, P.E., P.L.S.
Associate

Project Engineer: Leo Sum

Job Number: A07567-117



Prepared By:

Adam Mahoney, P.E., P.L.S.
Kier & Wright

Date

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Attachment 3	SQDV Calculations
Attachment 4	Stormwater Planter Volume Reduction Calculations
Attachment 5	Filtterra Bioscape System Sizing Calculations

1. Owner's Certification Statement

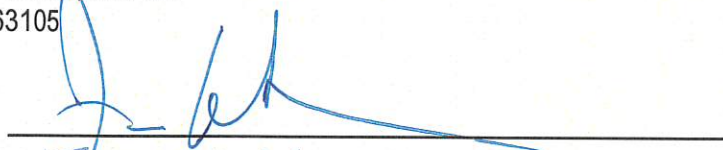
This project Stormwater Quality Control Plan (Plan) was prepared for ET Stockton Owner, LLC c/o CT Realty by Kier & Wright Civil Engineers & Surveyors. This plan is intended to comply with all requirements specified in the City of Stockton Stormwater Quality Control Criteria Plan (SWQCCP) for new development and redevelopment projects.

The undersigned understands that stormwater pollution control measures are enforceable requirements under the SWQCCP. The undersigned, while owning the property on which such control measures are to be implemented, is responsible for the implementation of the provisions of this Plan and for the maintenance of all structural stormwater pollution control measures and agrees to ensure that the conditions on the project site conform to the requirements specified in the SWQCCP.

Once the undersigned transfers its interest in the project property, its successors-in-interest shall bear the aforementioned responsibility to maintain structural stormwater pollution control measures and to implement and amend this Plan.

ET Stockton Owner, LLC c/o CT Realty
120 S. Central Avenue, Ste. 300
St. Louis, MO 63105
314.261.7348

Signature



Print Name

James G Koman

Title

Manager

Date

12-17-2020

2. Project Description

2.1 PROJECT CATEGORY

This project is a Priority Project as defined in the SWQCCP. The project is categorized as a *commercial development greater than or equal to 5,000 square feet* and includes a *parking lot with 5,000 square feet or more with 25 or more parking spaces and potentially exposed to urban runoff* (items 3 & 6 in the priority project list). The zoning for this project will be limited industrial.

2.2 PROJECT DESCRIPTION

The project consists of a new 582,592 square feet (SF) warehouse and 56,393 square feet (SF) office area with surrounding loading facilities, auto, and truck parking. The parking lot is designed to provide truck parking and trailer storage for approximately 915 trailers and 1,171 passenger automobiles. This site is located east of Logistics Drive and West of Austin Road in the City of Stockton. The parcel is approximately 72.42 acres (3,154,648 SF). The exhibits outlining the location of this project are included as attachments to this report.

The project will potentially generate pollutants consistent with vehicle usage and storage. Per Table 2-1 of the SWQCCP, these include sediment, nutrients, metals, trash/debris, and oxygen demand, toxic organics, and bacteria.

Surrounding land uses are consistent with this site – large distribution facilities, industrial facilities, and parking areas supporting these uses. Drainage from this site will be conveyed through existing closed storm drain systems after being treated in the thirty-one (31) high performance modular biofiltration systems.

2.3 SITE MAPS

2.3.1 Vicinity Map

The project site, located in Stockton, California, is shown below in a map of the vicinity, Figure 1. The site is located just south of North Little John's Creek.



Figure 1. Vicinity Map for 6001 Austin Road, CA 95215.

2.3.2 Site Map showing Stormwater Quality Control Plan

See attached site map.

3. Stormwater Pollution Control Measures

This project incorporates the required site design control, source control, volume reduction, and treatment control measures. Following are the required matrix indicating type of control measures provided:

Table 1: Excerpt of Table 2-2 from SWQCCP

Project Category	Site Design Controls				Source Controls							Volume Reduction Measures	
	Conserve Natural Areas (G-1)	Protect Slopes and Channels (G-2)	Minimize Soil Compaction (G-3)	Minimize Impervious Area (G-4)	Storm Drain Measures & Signage (S-1)	Outdoor Storage Area Design (S-2)	Trash Storage Area Design (S-3)	Loading/Unloading Dock Area Design (S-4)	Repair/Maintenance Bay Design (S-5)	Vehicle Equipment/Accessory Washing Area Design (S-6)	Fueling Area Design (S-7)	High Performance Modular Biofiltration System (Filterra Bioscope System)	Private Detention Basin for volume reduction
Commercial Developments	R	R	R	R	R	n/a	n/a	R	n/a	n/a	n/a	R	R

Note that in the above table, all items marked with an “R” are required and included in the design.

Our required elements are addressed as follows:

3.1 Site Design Control

- Conserve Natural Areas – applicable – we have designed our site in a manner to maximize trees and other vegetation by planting additional vegetation and promoting the use of native plants.
- Protect Slopes and Channels –applicable – this site has an existing slope of approximately 0.1% flowing east to west. The proposed conditions will require slightly steeper slopes in some locations. The project enforces erosion control measures to protect the slopes and nearby channels.
- Minimize Soil Compaction – applicable – soils will only be compacted onsite.
- Minimize Impervious Area – applicable – the project incorporates landscape islands and berms where possible and maximizes tree planting.

3.2 Source Control

- Storm Drain Measures and Signage – applicable – all storm drain catch basins will be stenciled as required per Stormwater Quality Control Criteria Plan Standards. See Keynote 1 in Attachment 1 (Site Map).
- Outdoor Storage Area Design – not applicable – there are no outdoor storage areas included in this project
- Trash Storage Area Design – not applicable – there are no trash storage areas included in this project. Trash will be handled with dock compactors on the North side of the building.
- Loading/Unloading Dock Area Design – applicable – all runoff from loading dock areas are directed to bioretention planters for treatment before entering the storm drain system. The design requirements for the outdoor loading/unloading docks are found on Page 4-9 of the City of Stockton Stormwater Quality Control Criteria Plan.
- Repair/Maintenance Bay Design – not applicable – no repair/maintenance bay on site
- Vehicle Equipment/Accessory Washing Area Design – not applicable – no vehicle equipment/accessory washing area on site
- Fueling Area- not applicable- there is no fueling area included in this project.

The “n/a” columns included above are not included as requirements for commercial developments in Table 2-2 of the SWQCCP due to site use considerations. This project is consistent with that assumption and does not include these as onsite uses.

3.3 Volume Reduction Measures

This site will reduce volume by utilizing a private detention basin. The spreadsheets attached to this report demonstrate the ability of this BMP to meet the volume reduction measure needs. See Attachment 3 – SQDV for the required and provided treatment volume calculations. Refer to Attachment 4 for the Volume Reduction Spreadsheets.

A detention basin is an excavated area capable of storing water for a limited period of time. Specifically, the detention basin located on this site has been designed to accommodate and retain 5 acre-feet of storage.

In the case of handling excess water from a large storm event, an overflow, controlled by the pump station is constructed to deal with volumes greater than the storage capacity within the basin. Lift stations are only meant for volumes beyond the 5 acre-feet retainage that the basin has been designed for. The pump station contains a redundant system of Flygt N3153 LT pumps, which carries both lead and lag pumps. Additionally, a trash capture system is implemented to reduce contaminants in the water before the medium outfalls into Weber Slough.

3.4 Treatment Control

The site will be treated with 31 high performance modular biofiltration systems designed by Filterra. These treatment planters are designed to meet the requirements of the SWQCCP. The spreadsheets attached to this report demonstrate the ability of these BMPs to meet the site stormwater treatment needs.

A high performance modular biofiltration system, like a regular bio-retention treatment garden, is a vegetated shallow depression that is designed to receive, retain, and infiltrate rainwater runoff from sheet flow. Additionally, these systems provide vegetated surface underlain with planting media, gravel, and subsurface drain pipe. However, due to its high performance, the product, also known as Filterra Bioscape System, results in a reduced required sizing area than that of regular biotreatment planters. Each DMA on site drains to a specific device, which provides further treatment of stormwater before making its way to the detention basin. The calculation sizings of the Filterra Bioscape Systems can be found located in the upper table of the SWQCP in Attachment 2 or the Bioscape Filterra System Sizing Calculations in Attachment 5.

4. Maintenance Plan and Responsibility

The structural control measures used for this project consist of thirty-one (31) high performance modular biofiltration systems that all drain into the detention basin located by the west side of the property.

High Performance Modular Biofiltration System(s) 1 through 31 are located across the entire property as shown in Sheet C7.0 of the SWQCP.

Detention Basin is located to the westside of the property and runs vertically from the northern property line, all the way south to Weber Slough. Additionally, the basin ultimately discharges water into Weber Slough through a pump system, which is included in the O&M.

The property owner, ET Stockton Owner, LLC c/o CT Realty, shall be responsible for the maintenance of the above control measures. At the time there is no indication of any pending transfer of the ownership, and thereby the responsibility, of this property.

The property owner contact information is as follows:

Attn: James G. Koman
ET Stockton Owner, LLC c/o CT Realty
120 S. Central Avenue, Ste. 300
St. Louis, MO 63105
Phone 314.261.7348

A detailed Maintenance Plan, dated December 16, 2020, has been prepared in accordance with SWQCCP requirements.

5. Attachments

Attachment 1	Site Map and Detail
Attachment 2	Storm Water Quality Control Plan and Biofiltration Sizing
Attachment 3	SQDV Calculations
Attachment 4	Stormwater Planter Volume Reduction Calculations
Attachment 5	Filtterra Bioscape System Sizing Calculations

ATTACHMENT 1
SITE MAP

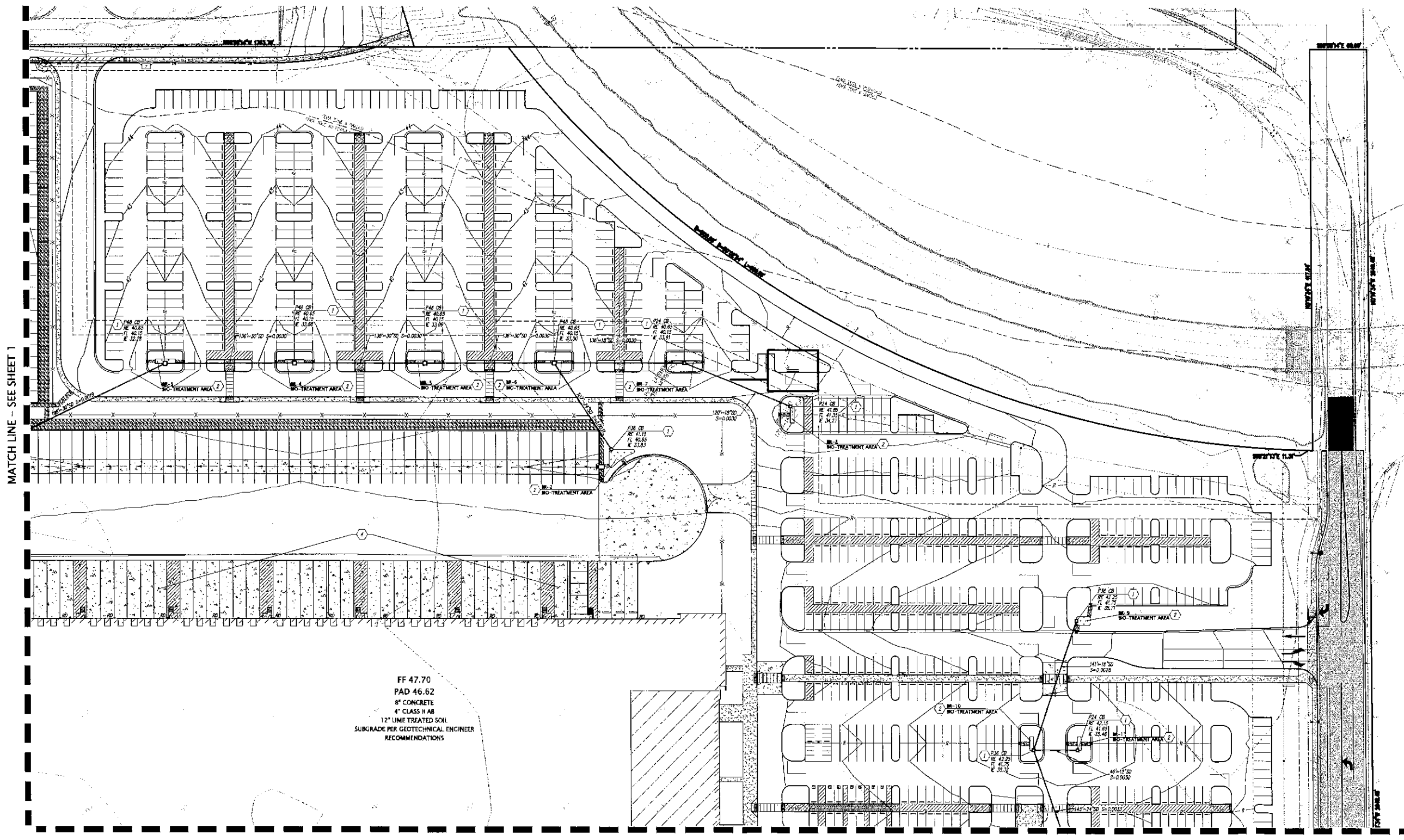
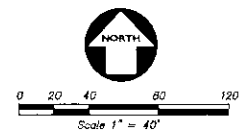
SITE MAP KEYNOTES

- ① 5-1 STORM DRAIN SIZING PER SWOOD STANDARD
- ② HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEMS SEE DETAIL FROM FILTERBA PER ATTACHMENT 2
- ③ STORM DRAIN FLARED END SECTION PER DETAIL 1/SHEET 5 (TYP)
- ④ OUTDOOR LOADING/UNLOADING DOCK AREA (TYP)

PROPOSED	EXISTING

LEGEND

PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING



MATCH LINE - SEE SHEET 1

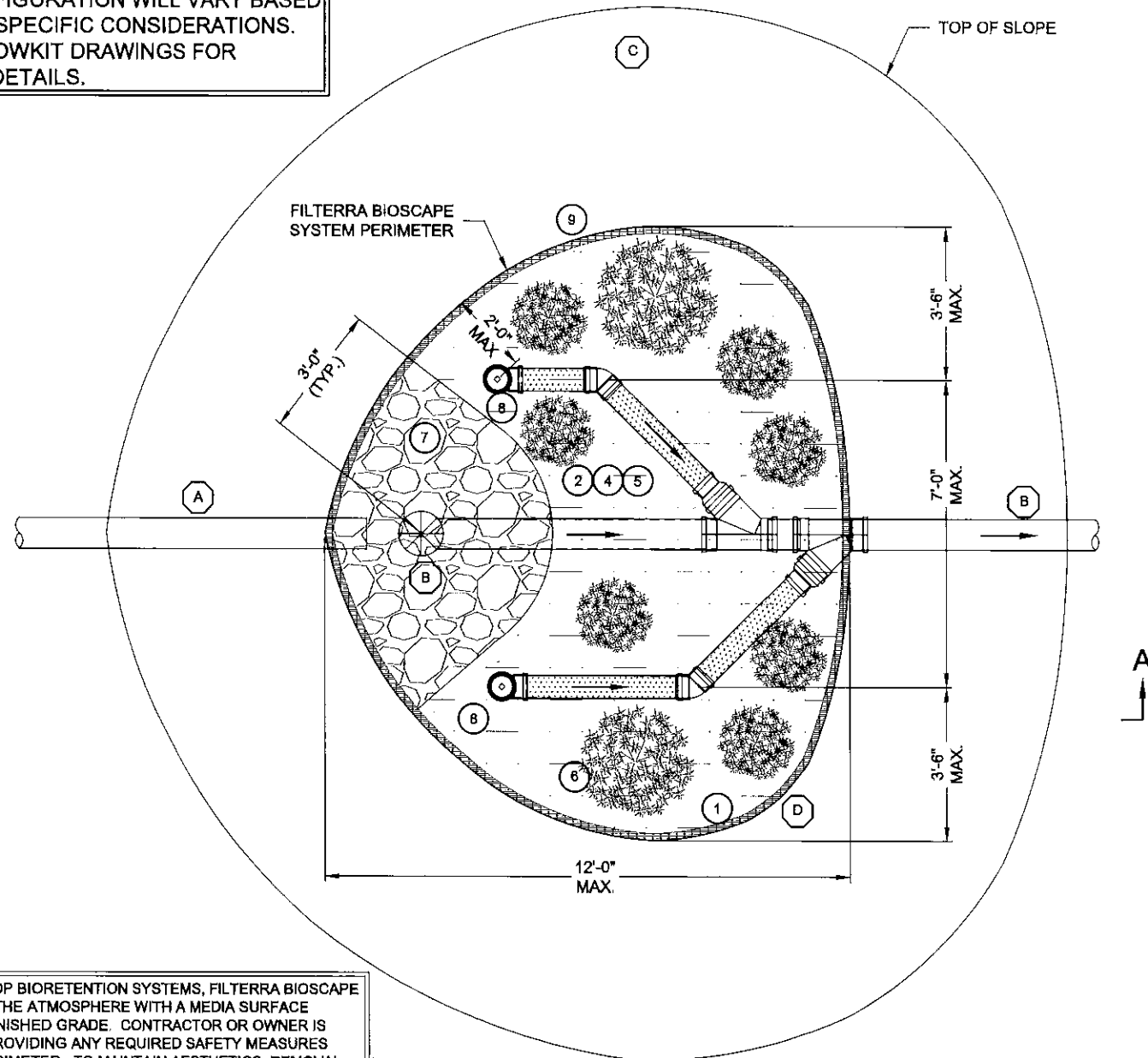
MATCH LINE - SEE SHEET 4

FF 47.70
PAD 46.62
8" CONCRETE
4" CLASS II AR
12" LIME TREATED SOIL
SUBGRADE PER GEOTECHNICAL ENGINEER
RECOMMENDATIONS

NO.	BY	REVISION	
1		NO.	BY
2		1	
3		2	
4		3	
<p>KIER+WRIGHT Professional Engineer No. 8216 State of California 2885 Collier Canyon Road Livermore, CA 94551 Phone: (925) 446-8774 www.kierwright.com</p>			
<p>SITE MAP OF PROJECT SANCHEZ ON CT REALTY</p>			
<p>CALIFORNIA</p>			
<p>STOCKTON</p>			
<p>DATE: SEPTEMBER, 2020 SCALE: AS SHOWN DESIGNER: KAR DRAWN BY: MGC JOB NO.: A27567-117 SHEET: 2 OF 5 SHEETS</p>			

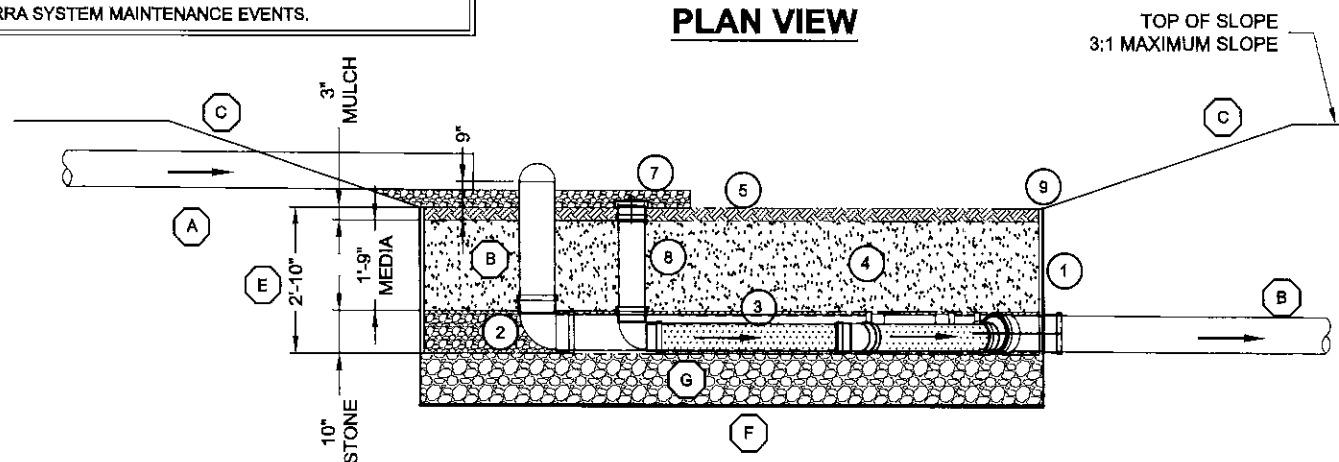
ATTACHMENT 2
STORMWATER QUALITY CONTROL PLAN

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



PLAN VIEW

AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.



SECTION A-A VIEW

BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE

*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES

- CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
- PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
- USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
- CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
- CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
- CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:

- (A) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE.
- (D) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
- (F) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:

- (1) PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
- (2) PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
- (3) PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH, ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (4) PLACE 21" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
- (5) PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
- (6) PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
- (7) PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
- (8) PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
- (9) PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH
ENGINEERED SOLUTIONS LLC

www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE™ SYSTEM
STANDARD DETAIL

ATTACHMENT 3
SQVD CALCULATIONS

Detention Basin 1 - Weighted C Factor				
Site Element	Element Area (SF)	Fraction of Total Area	Element Stormwater Runoff Coefficient	Weighted Stormwater Runoff Coefficient (C)
Impervious	2,789,631	0.88	0.95	0.84
Pervious	359,910	0.11	0.25	0.03
Planter	3,656	0.00	0.03	0.00
Detention Basin TOTAL	3,153,197	1.00		0.87
Effective Area (Aeff)	3,153,197			
Vu (Table T0, Inches)	0.45		Based on 48 Hour Draw-Down	
Required SQDV = Vu/12 x Aeff		118,245	CF	
Bottom Area (sf)		138,573	SF	
Top Area (sf)		274,377	SF	
Ponding Depth (ft)		14	FT	
Freeboard (ft)		1	FT	
Provided Storage (Ponding Area x Ponding Depth)		2,890,650	CF	Provided Storage Exceeds Required Storage

ATTACHMENT 4
VOLUME REDUCTION CALCULATIONS

**City of Stockton/ County of San Joaquin
2009 Stormwater Quality Control Criteria Plan
Volume Reduction Calculator (Updated July 16, 2010)**

- ▶ Make sure that Macros are enabled while using the Calculator
- ▶ This calculator is solely for the purposes of determining compliance with the Volume Reduction Requirement. This is not a substitute and should not be used to determine compliance with SQDV/SQDF or any other new development/redevelopment requirements.
- ▶ Volume Reduction is only given to Volume Reduction Measures and LID Treatment Controls. Volume Reduction is not given to Conventional Treatment Controls including wet ponds and proprietary controls.
- ▶ The Calculator is intended as a companion to the SWQCCP and not to replace or be independent of it. Therefore all of the details contained within the SWQCCP are not contained within the calculator.
- ▶ **Instructions:** Fill in the yellow boxes with the requested information. Numbers in the remainder of the boxes will be automatically filled out for you.
 - ▷ Each of the following worksheets will assist you in calculating the volume reduction achieved for Volume Reduction Measures and LID Treatment Controls. A worksheet must be filled out for each Volume Reduction Measure and LID Treatment Control (e.g., if there are 3 Rain Gardens proposed on the site, 3 Rain Garden worksheets must be filled out).
 - ▷ Once the information is filled out for the proposed Volume Reduction Measures and LID Treatment Controls, click in the **red** box below. This will run a macro that will sum up the volume reduction achieved by Volume Reduction Measures and LID Treatment Controls. **NOTE to Mac Users:** The Mac version of Excel may not be capable of running macros so you may have to manually sum up the volume reduction gained from Volume Reduction Measures and LID Treatment Controls.

Project:	Sanchez Project
Detail:	
Design by:	KRR
Date:	12/8/2020

1. PRE-PROJECT CHARACTERISTICS		Notes
a. Total Project Area, ft ² (A _{PRE})	3153197.0	Total Project Area must be entered first before any other calculations can be made
b. Weighted Runoff Coefficient (C _{PRE})	0.25	Go to "Cr Calcs" to calculate (orange tab)
c. Volume Reduction Requirement storm depth, inches (d)	0.51	Avg. 85th percentile, 24-hour storm depth for Stockton area
d. Significant Redevelopment Volume Reduction Credit, inches (Redev _{credit}) An additive credit of 0.05 inches is available for five types of redevelopment projects: - Significant Redevelopment (as defined in Section 2.1 of 2009 SWQCCP) - Brownfield redevelopment - High density (>7 units/acre) - Vertical Density (FAR of 2 or >18 units/acre) - Mixed use and Transit Oriented Development (within 1/2 mile of public transit)	0.00	- Credits are additive such that a maximum credit of 0.25 inches is possible for a project that meets all five criteria. - New development projects are not eligible for the criteria.
e. Revised Volume Reduction Requirement storm depth, inches (d _{revised})	0.51	
f. Pre-project Runoff Volume, ft ³ (Vol _{PRE}) Vol _{PRE} = (d _{revised} /12) x A _{PRE} x C _{PRE}	33502.7	

2. POST-PROJECT CHARACTERISTICS		Notes
a. Total Project Area, ft ² (A _{POST})	3153197.0	
b. Weighted Runoff Coefficient (C _{POST})	0.87	Go to "Cr Calcs" to calculate (orange tab)
c. Volume Reduction Requirement storm depth, inches (d)	0.51	
d. Significant Redevelopment Volume Reduction Credit, inches (Redev _{credit}) An additive credit of 0.05 inches is available for five types of redevelopment: - Significant Redevelopment (as defined in Section 2.1 of 2009 SWQCCP) - Brownfield redevelopment - High density (>7 units/acre) - Vertical Density (FAR of 2 or >18 units/acre) - Mixed use and Transit Oriented Development (within 1/2 mile of public transit)	0.00	- Credits are additive such that a maximum credit of 0.25 inches is possible for a project that meets all five criteria. - New development projects are not eligible for the criteria.
e. Revised Volume Reduction Requirement storm depth, inches (d _{revised})	0.51	
f. Post-project Runoff Volume, ft ³ (Vol _{POST}) Vol _{POST} = (0.51/12) x A _{POST} x C _{POST}	116494.2	

VOLUME RUNOFF REDUCTION REQUIREMENT, ft³ (VRR) VRR = Vol _{POST} - Vol _{PRE}	82991.5
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3. VOLUME REDUCTION MEASURES		Notes
a. Total Volume Reduction from Volume Reduction Measures, ft ³ (∑ Vol _{VRM})	0.0	Click in red box below to tally the volume reduction achieved by Volume Reduction Measures and LID Treatment Controls.
b. Remaining Volume Reduction required from LID Treatment Controls, ft ³ (VRR _{TREAT}) VRR _{TREAT} = VRR - ∑ Vol _{VRM}	82991.5	

4. LID TREATMENT CONTROLS		Notes
a. Total Volume Reduction from LID Treatment Controls, ft ³ (∑ Vol _{TREAT})	118299.3	CLICK IN BOX TO LEFT to tally the volume reduction achieved by Volume Reduction Measures and LID Treatment Controls.
b. Total Volume Reduction Provided, ft ³ (VRR _{PROVIDED}) VRR _{PROVIDED} = ∑ Vol _{VRM} + ∑ Vol _{TREAT}	118299.3	

VOLUME REDUCTION REMAINING, ft³ (VRR_{REMAIN}) VRR _{REMAIN} = VRR - VRR _{PROVIDED}	-35307.8
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RUNOFF COEFFICIENT CALCULATIONS

* Total Site Area must be entered in "Summary Sheet" before you can proceed

PRE-PROJECT WEIGHTED RUNOFF COEFFICIENT

Site Element	Element Runoff Coefficient* (C _e)	Element Area, ft ² (A _{element})	Fraction of Total Area (A _{element} /A _{site})	Weighted Runoff Coefficient (C _{total})	Notes
Disturbed Soils: Type C/D Soil	0.25	3153197.0	1.00	0.25	Select a site element from the drop down list; a corresponding runoff coefficient will appear. If you wish to enter your own, please use Other 1 through 3 below.
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
Permeable Pavement			0.00	0.00	Runoff coefficient for permeable pavements will vary. Please consult the manufacturer for appropriate design values.
Other1:			0.00	0.00	Use Other 1, Other 2, and Other 3 if a particular site element is not included in the drop down list. To do so manually enter the name of the new site element into the row and corresponding runoff coefficient.
Other2:			0.00	0.00	
Other3:			0.00	0.00	
TOTAL SITE		3153197.0		0.25	Make sure the Total for the Element Area column adds up to the Total Area of the Site (A _{site})

* Adapted from the Center for Watershed Protection, Ellicott City, MD

POST-PROJECT WEIGHTED RUNOFF COEFFICIENT

Site Element	Element Runoff Coefficient* (C _e)	Element Area, ft ² (A _{element})	Fraction of Total Area (A _{element} /A _{site})	Weighted Runoff Coefficient (C _{total})	Notes
Asphalt/concrete pavement	0.95	2150656.0	0.68	0.65	Select a site element from the drop down list; a corresponding runoff coefficient will appear.
Disturbed Soils: Type C/D Soil	0.25	363566.0	0.12	0.03	
Vegetated Areas w/ Amended Type A Soil	0.03	0.0	0.00	0.00	
Rocks	0.95	633975.0	0.20	0.19	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
Permeable Pavement			0.00	0.00	Runoff coefficient for permeable pavements will vary. Please consult the manufacturer for appropriate design values.
Other1:			0.00	0.00	Use Other 1, Other 2, and Other 3 if a particular site element is not included in the drop down list. To do so manually enter the name of the new site element into the row and corresponding runoff coefficient.
Other2:			0.00	0.00	
Other3:			0.00	0.00	
TOTAL SITE		3153197.0		0.87	Make sure the Total for the Element Area column adds up to the Total Area of the Site (A _{site})

* Adapted from the Center for Watershed Protection, Ellicott City, MD

**LID TREATMENT CONTROL:
INFILTRATION BASIN (L-4)**

UNIQUE ID: Detention Basin

- ▶ A separate worksheet must be completed for each infiltration basin within the proposed development project (e.g., 3 infiltration basins proposed = 3 separate infiltration basin worksheets; one for each infiltration basin). Copy this spreadsheet as many times as necessary to accommodate all the infiltration basins in the project. To copy this spreadsheet, simply right click on the tab, select "Move or Copy", then select "Infiltration Basin (L-4)", check the "Create a Copy" box, and hit OK.
- ▶ The Volume Reduction allowed for Infiltration Basins is equal to the SQDV for the infiltration basin. The following are the steps necessary to calculate the SQDV for Infiltration Basins.

1) INFILTRATION BASIN DRAINAGE AREA

Design Parameter	Criteria	Notes
a. Drainage Area, ft ² (A _{Drainage})	3153197.0	Drainage area to infiltration basin

2) WEIGHTED RUNOFF COEFFICIENT FOR INFILTRATION BASIN DRAINAGE AREA

▶ Identify the area if each element within the Infiltration Basin's drainage area:

Drainage Area Post-Construction Element	Element Runoff Coefficient* (C _e)	Element Area, ft ² (A _{Element})	Fraction of Drainage Area (A _{Element} /A _{Drainage})	Weighted Runoff Coefficient (C _{da})	Notes
Asphalt/concrete pavement	0.95	2150656.0	0.68	0.65	Select a site element from the drop down list; a corresponding runoff coefficient will appear; if you wish to enter your own, please use Other 1 through 3 below
Disturbed Soils: Type C/D Soil	0.25	363566.0	0.12	0.03	
Vegetated Soils w/ Amended Type A Soil	0.03	0.0	0.00	0.00	
Roofs	0.95	638975.0	0.20	0.19	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
			0.00	0.00	
Permeable Pavement			0.00	0.00	Runoff coefficient for permeable pavers will vary. Please consult the manufacturer for appropriate design values.
Other 1:			0.00	0.00	Use Other 1, Other 2, and Other 3 if a particular site element is not included in the drop down list. To do so manually enter the name of the new site element into the row and corresponding runoff coefficient.
Other 2:			0.00	0.00	
Other 3:			0.00	0.00	
TOTAL SITE		3153197.0		0.87	Make sure the Total for the Element Area column adds up to the Total Area of the Drainage Area

3) EFFECTIVE TRIBUTARY AREA

↳ Subtract out the Tributary Impervious Area Credits associated with the Volume Reduction Measures located within the Infiltration Basin's drainage area

Drainage Area Post-Construction Element	Element Area, ft ² (A _{element})	Tributary Impervious Area Credit* (A _{credit}), ft ²	Effective Area (A _{eff}), ft ²
Asphalt/concrete pavement	2150656.0	0.0	2150656.0
Disturbed Soils: Type C/D Soil	363566.0	0.0	363566.0
Vegetated Areas w/ Amended Type A Soil	0.0	0.0	0.0
Roots	638975.0	0.0	638975.0
	0.0		0.0
	0.0		0.0
	0.0		0.0
	0.0		0.0
	0.0		0.0
	0.0		0.0
Permeable Pavement	0.0		0.0
Other1:	0.0		0.0
Other2:	0.0		0.0
Other3:	0.0		0.0
TOTAL EFFECTIVE AREA (A_{eff})			3153197.0

*Tributary Impervious Area Credit (A_{credit}) must be obtained from Volume Reduction Measures (e.g., rain gardens and interception trees) within the tributary area of the infiltration basin. A_{credit} was calculated in and can be obtained from the Volume Reduction Measure worksheets.

4) VOLUME REDUCTION FOR INFILTRATION BASIN

Design Parameter	Criteria	Notes
a. Unit Basin Storage Volume (V _u)	0.45	Obtain unit basin storage volume for 48-hour drawdown using the C _u calculated above and SWQCCP Figure 6-1
b. Volume Reduction, ft ³ (Vol _{reduction}) = V _u x A _{eff} / 12 in/ft	118244.9	- aka SODV - Volume reduction achieved by infiltration basin

ATTACHMENT 5
FILTERRA BIOSCAPE SYSTEM SIZING CALCULATIONS

FILTERRA BIOSCAPE SYSTEM SIZING CALCULATIONS

C, Runoff Coefficient =	0.9
I, Rainfall Intensity (in/hr) =	0.2
Filtterra Treatment Rate (in/hr) =	175

DMA No.	Area (SF)	Area (AC)	Landscape (SF)	Landscape (AC)	Imperv. (SF)	Imperv. (AC)	Estimated Q* (CFS) Water Quality Storm	Treatment Required* (SF)	Treatment Provided (SF)	Type of Planter
1	267,961	6.15	16,351	0.375	251,324	5.77	1.11	273	286	Filtterra Bioscape
2	224,889	5.16	23,236	0.533	201,371	4.62	0.93	229	282	Filtterra Bioscape
3	68,126	1.56	14,583	0.335	53,449	1.23	0.28	69	95	Filtterra Bioscape
4	50,804	1.17	9,905	0.227	40,830	0.94	0.21	52	70	Filtterra Bioscape
5	52,622	1.21	11,462	0.263	41,090	0.94	0.22	54	70	Filtterra Bioscape
6	44,969	1.03	9,852	0.226	35,070	0.81	0.19	46	48	Filtterra Bioscape
7	38,971	0.89	9,630	0.221	29,281	0.67	0.16	40	60	Filtterra Bioscape
8	42,295	0.97	7,326	0.168	34,901	0.80	0.17	43	68	Filtterra Bioscape
9	119,945	2.75	36,334	0.834	83,479	1.92	0.50	122	132	Filtterra Bioscape
10	48,100	1.10	7,637	0.175	40,407	0.93	0.20	49	56	Filtterra Bioscape
11	39,075	0.90	10,143	0.233	28,876	0.66	0.16	40	56	Filtterra Bioscape
12	22,462	0.52	2,664	0.061	19,765	0.45	0.09	23	33	Filtterra Bioscape
13	35,817	0.82	11,044	0.254	24,729	0.57	0.15	37	44	Filtterra Bioscape
14	42,741	0.98	7,208	0.165	35,482	0.81	0.18	44	51	Filtterra Bioscape
15	29,884	0.69	9,809	0.225	20,031	0.46	0.12	30	44	Filtterra Bioscape
16	45,581	1.05	7,456	0.171	38,074	0.87	0.19	46	51	Filtterra Bioscape
17	37,899	0.87	10,995	0.252	26,859	0.62	0.16	39	45	Filtterra Bioscape
18	41,055	0.94	8,952	0.206	32,049	0.74	0.17	42	54	Filtterra Bioscape
19	102,412	2.35	39,883	0.916	62,401	1.43	0.42	104	128	Filtterra Bioscape
20	482,637	11.08	27,242	0.625	454,883	10.44	1.99	492	512	Filtterra Bioscape
21	299,518	6.88	10,075	0.231	289,128	6.64	1.24	306	315	Filtterra Bioscape
22	75,716	1.74	5,267	0.121	70,362	1.62	0.31	77	87	Filtterra Bioscape
23	73,625	1.69	8,966	0.206	64,567	1.48	0.30	75	92	Filtterra Bioscape
24	111,491	2.56	1,089	0.025	110,282	2.53	0.46	114	120	Filtterra Bioscape
25	125,469	2.88	1,851	0.042	123,483	2.83	0.52	128	135	Filtterra Bioscape
26	91,313	2.10	1,095	0.025	90,104	2.07	0.38	93	114	Filtterra Bioscape
27	124,399	2.86	1,762	0.040	122,502	2.81	0.51	127	135	Filtterra Bioscape
28	56,879	1.31	2,445	0.056	54,364	1.25	0.24	58	70	Filtterra Bioscape
29	80,702	1.85	15,202	0.349	65,413	1.50	0.33	82	87	Filtterra Bioscape
30	148,056	3.40	24,931	0.572	122,961	2.82	0.61	151	164	Filtterra Bioscape
31	127,782	2.93	5,516	0.127	122,114	2.80	0.53	130	152	Filtterra Bioscape
TOTALS	3,153,197	72.39	359,910	8.26	2,789,631	64.04	13.03	3,216	3,656	

*: The systems are meant to provide for treatment only. No volume credit has been applied/taken, all volume reduction comes from the basin.

Drainage Area 1 (Example)			
C-Factor:	0.9	Total Tributary Area (Ac)	6.15
Rainfall Intensity, I (in/hr):	0.2	Filtterra Treatment Rate (in/hr):	175
Estimated Q (Cfs) =	$C * I * A$		1.11
Filtterra Area Required (Sf) =	$Q * \frac{hr}{175 in} * \frac{3600 s}{1 hr} * \frac{12 in}{1 ft} = A$		273