NORTH COUNTY TRANSIT DISTRICT

FINAL
LANDSCAPE DESIGN AND MAINTENANCE MANAGEMENT PLAN

Storm Water Management Services

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Introduction

NCTD has developed this Landscape Design and Maintenance Plan (LDMP) to implement a program which focuses on pollution prevention, source control best management practices, and landscape design and maintenance to reduce the amount of pesticides, herbicides, and fertilizers stormwater discharges within NTCD owned and operated properties. As required within the second year of the MS4 General Permit, NCTD has evaluated pesticides, herbicides, and fertilizers currently being used during landscape maintenance activities, including invasive weed control spraying along Coaster and Sprinter ROW.

Pursuant to MS4 General Permit section F.5.f.9 (ii)(b), NCTD will use the landscape maintenance principles discussed in this document to reduce the amount of pesticides, herbicides, and fertilizers in stormwater discharges, whenever applicable and appropriate. NCTD has developed an Integrated Pest Management (IPM) Plan pursuant to Section F.5.f.9 (ii) (b) (2) of the MS4 General Permit that evaluates all the pesticides, herbicides, and fertilizers currently being used during landscape maintenance activities to identify pollution prevention and source control opportunities. The IPM is included in Appendix A.

1.0 Policy and Regulations

The State Water Resources Control Board (SWRCB) promulgated new requirements for storm water discharges for Phase II Small Municipal Separate Storm Sewer Systems (MS4s) on July 1, 2013 by issuing the Water Quality Order No. 2013-0001-DWQ (General Permit No. CAS 000004). North County Transit District (NCTD) was designated as a new Non-Traditional Small MS4 Permittee subject to this general permit. In order to comply with the Non-traditional Small MS4 permit provisions, specifically Section F.5.f.9, NCTD has developed this Landscape Design and Maintenance Management (LDM) Plan.

1.1 NCTD Policy

NCTD is in the development stages of preparation and adoption of new relevant policies, contractual provisions, base orders, resolutions or other regulatory mechanisms to ensure it has at a minimum, the legal authority to enforce the Phase II Small MS4 Permit requirements. NCTD has designated the Chief Development Officer in charge of the Development Services Division, as the Legally Responsible Person (LRP) for the Phase II Small MS4 Permit (Order No. 2013-0001-DWQ). In addition, the program will also be supported by the Chief of Planning in charge of the Planning Division, as well as, the Chief Operations Officer in charge of the Operations Division.

NCTD has initiated a review of current policies, ordinances, contractual provisions, construction project specifications and submittals to gauge and identify any gaps in the current policies and ordinances. After the completion of the review, NCTD may develop internal polices and ordinances in support of storm water compliance, as warranted. NCTD is developing Legal Authority language that may be used to support the following elements below:

1.1.1 NCTD Jurisdiction

NCTD's area of purview for the Phase II Small MS4 General Permit (Small MS4 Permit) boundary is generally their rail Right-of-Way (ROW) and facilities bounded by their parcel boundaries as described in the following list:

- The rail ROW beginning at the Orange County and San Diego County boundary in the north to the City of Del Mar and City of San Diego boundary in the south. The Coaster operates on this rail;
- The rail ROW beginning in Oceanside, California in the west to Escondido, California. The Sprinter operates on this rail; and
- NCTD's various facilities not within the City of San Diego, including stations, transit centers and maintenance facilities.

This plan applies to all railroad track ballast, rights-of-way, station grounds, rail yards, bridges, road and pedestrian crossings, around shops, buildings, communications and signals within all property owned or controlled by NCTD (with the exception of all "Mitigation Sites"). Mitigation sites are being managed separately under project specific mitigation plans and/or revegetation plans, which will include specific pesticide and/or herbicide requirements.

1.1.2 Develop Contract Language

NCTD has incorporated relevant landscape design and maintenance measures into Request for Proposal (RFP) solicitations, Invitation for Bids (IFBs), real estate licenses, leases, and Right-of-Way Permits. This contract language will ensure NCTD has the legal authority to require vendors, contractors, and operators of facilities to minimize the discharge of pollutants to the MS4 through the installation, implementation, and maintenance of BMPs consistent with CASQA standards. This contract enhancement process will continue as NCTD moves forward with the program.

1.1.3 Develop Design Review Process

The design plan review process will control post-construction stormwater run-on by implementing low impact design (LID) and site design measure standards for new projects designed after July 1, 2015. NCTD is working collaboratively with SANDAG to develop a framework for incorporating LID and site design measures into new projects using San Diego County Standard Urban Stormwater Mitigation Plan (SUSMP) site design and LID alternatives.

1.2 NCTD Designated Mitigation Sites

NCTD is required to mitigate for any temporary or permanent impacts to waters of the United States (U.S.), as well as vegetated waters of the U.S. within NCTD owned ROW by construction or maintenance activities. This is required by the Clean Water Act (CWA) Section 401 Water Quality Certificate and Section 404 of the CWA of 1972. The U.S. Army Corps of Engineers is the lead agency for Section 404 Permits and the Water Quality Control Board is the lead agency for the 401-Water Quality Certificate Permit. Additionally, NCTD is required to consult with U.S. Fish and Wildlife Service for any proposed impacts to threatened, or endangered species habitat. The U.S. Fish and Wildlife Service issued a Biological Opinion (BO) for designated critical habitat along the Sprinter and Coaster ROW for impacts to

the gnatcatcher and the vireo. Additionally, the BO contains proposed upland mitigation measures to offset permanent impacts to waters of the U.S. during construction. The BO requires a Habitat Mitigation and Monitoring Plan to minimize, avoid, and protect the mitigation sites required by the natural resources agencies.

NCTD acquired land within existing land banks or within other properties identified as areas likely to be incorporated into the Multiple Habitat Conservation Program jurisdictions that the rail alignment passes through. Each mitigation site has a separate mitigation plan and/or revegetation plan, governing how it is to be maintained pursuant to the special conditions of the U.S. Army Corps of Engineer and Regional Water Quality Control Board Permits. As such, maintenance activities described in this LDM plan should not be applied to any designated mitigation site. However, landscape design aspects discussed in this LDM plan should be incorporated into future project specific mitigation plans and/or revegetation plans, whenever possible.

Maps showing the locations of the NCTD Mitigation areas have been included in Appendix B.

2.0 Landscape Design

Pursuant to the Small MS4 Permit Section F.5.f.9.(ii)(a) & (b), NCTD will use the landscape design principles discussed below when evaluating and reviewing project applications, to identify pollution prevention and source control opportunities. The intent of the landscape design principles are to reduce and/or eliminate discharges of pesticides, herbicides, fertilizers, irrigation run-off, and sediment deposition whenever applicable and appropriate.

2.1 Pollution Prevention

Landscaping on NCTD properties provides both a potential pollution source and a means to prevent stormwater pollution. Multiple facets during the landscape design phase need to be evaluated to:

- Ensure the landscape design does not contribute contaminants to stormwater run-off; and
- Identify ways the landscape design can actually reduce pollution in stormwater run-off from the newly landscaped and adjacent areas.

Best Management Practices (BMPs) for pollution prevention, both source and non-source control, need to be considered during the landscape design process. Proper plant design (type, layout, etc.) and irrigation design (layout, sizing, automation, weather tracking, etc.), are also a part of the landscape design process which can reduce contaminant run-off. Considerations for maintenance of the landscaping during the design process can also have a future effect by reducing contaminants (fertilizers, etc.) in run-off.

2.2 BMPs

2.2.1 Source Control

Source control BMPs can be either structural or non-structural, and are a part of the daily activities that take place at NCTD facilities. Non-structural source control BMPs are administrative or policy changes that help minimize the contact between pollutants and stormwater runoff. Non-structural source control BMPs can include:

- General Pollution Prevention Protocols (e.g. collect lawn and garden clippings)
- Good Housekeeping (e.g. perform trimming and pruning practices)
- Preventative Maintenance (e.g. perform water and sprinkler line inspections)
- Spill and Leak Prevention and Response (e.g. use dry cleanup methods if possible)
- Material Handling and Waste Management (e.g. compost leaves or other vegetative material when possible)
- Erosion and Sediment Controls (e.g. apply mulch or other vegetative cover)
- Applicator Training and Licensing Program (e.g. revise application methods)
- Pest Management (e.g. Limit, replace or eliminate the use of herbicides and pesticides)
- Cultivation Methods (e.g. Limit or eliminate the use of fertilizers)
- Weed Control (e.g. limit the use of herbicides or replace with mechanical removal methods)
- Water/Irrigation Management (e.g. use low flow sprinkler heads; use reclaimed water)

- Quality Assurance and Record Keeping (e.g. maintain an inventory list of materials used or activities performed)

Structural source control BMPs are engineered system designed and constructed to reduce or remove pollutants from stormwater runoff. Structural source control BMPs can include:

- Signage, stenciling, and labeling of inlets and catch basins (e.g. storm drain messages)
- Stormdrain Inlet Protection (e.g. storm drain inlet inserts, grills and grates to capture debris)
- Irrigation design and controls to reduce water consumption (e.g. layout, automated, rain shutoff devices, moisture sensors, etc.)
- Constructed Bioretention Cells (e.g. rain gardens, vegetated water retention islands)
- Constructed Filtration Systems (e.g. media or sand filtration devices, stormwater clarifiers)
- In-line Hydrodynamic Separators (e.g. flow thru structure with a settling or separation unit)
- Above Ground Storage Vessel (e.g. cistern or rain barrels)
- Below Ground Storage Vessel (e.g. flow thru chambers that separate constituents)
- Properly designed trash handling and storage areas (e.g. construct protective canopies for bins)
- Protection of slopes and channels

2.2.2 Treatment Control

Treatment control BMPs are designed to remove pollutants contained in storm water runoff. Methods of pollutant removal include sedimentation settling, filtration, plant uptake, adsorption, and bacterial decomposition. Floatable pollutants such as oil and debris can be removed with separator structures. Treatment control facilities may need to be used in series as a “Treatment Train” to achieve the desired level of pollutant removal for different pollutants. Treatment control BMPs can include:

- Infiltration basin
- Bioretention basin
- Constructed wetlands
- Vegetated swales

Many treatment control BMPs are associated with Low-Impact Development (LID) design techniques.

2.3 Plant Selection

Pursuant to permit section F.5.f.9.(ii)(b)(2)(a), NCTD shall include the use of native and climate-appropriate plants for decorative landscape applications (to reduce water use and fertilization requirements). Proper plant design during the landscape design phase can contribute to pollution prevention by reducing sediment erosion through reduced irrigation. Areas to be considered during plant design include: plant type, layout, water usage, etc.

2.3.1 Plant Type

- Invasive species shall not be added to a landscaped area.
- Trees shall not be planted within a public utility easement unless otherwise approved by the City.

- Avoid planting trees and large shrubs above or near sewer laterals, water mains, meter boxes and other utilities.
- Trees with broad branch structures shall be planted only where sufficient space is available.
- Plant type, size at maturity, and location shall be selected to avoid obstructing existing or planned passive solar energy systems.
- Trees with surface root systems shall be planted only where sufficient space is available, unless the plan provides for installation of root control barriers or other appropriate devices to control surface roots.

2.3.2 Plant Layout

- Plants in a transitional area (adjacent to native vegetation) shall consist of a combination of site adaptive and compatible native and/or non-native species, and shall conform to the requirements in Section 5 – Fire Protection Requirements.
- Evergreen plants shall be used to screen unsightly elements and shall be spaced to provide 100% screening within two (2) years of installation.
- Areas of public and private recreation facilities (ball field, park, golf course, etc.) shall be designed to limit turfgrass in any portion of a landscaped area not essential for the operation of the facility.
- Areas generally not visible to the public or site occupants (backs of buildings, service areas, behind fences and screens, etc.) shall incorporate plant materials other than turfgrass, unless the area is designated as a recreation area.

2.3.3 Plant Water Usage

- All plants shall be grouped in hydrozones and the irrigation shall be designed to deliver water to hydrozones based on the moisture requirements of the plant grouping.
- A hydrozone may mix plants of moderate and low water use or mix plants of high water use with plants of moderate water use.
- No high water use plants shall be allowed in a low water use hydrozone.

2.3.4 Plant Mulching

Pursuant to permit section F.5.f.9.(ii)(b)(2)(d), NCTD shall include mulching or composting in landscape designs to control the spread of clippings and leaves from reaching waterways and/or streets. Mulching guidelines include:

- A minimum three (3) inch layer of mulch shall be applied on all exposed soil surfaces in each landscaped area except in turfgrass areas, direct seeding applications, or erosion control plantings where mulch is not recommended.
- Impervious materials shall not be placed under the mulch.
- Highly flammable mulch material shall not be used.

2.4 Irrigation Design

- Reduce irrigation contribution to dry-weather runoff by avoiding spray irrigation patterns where overspray to paved surfaces or drain inlets will occur;
- To avoid overwatering and potential irrigation runoff, design irrigation systems to each landscape area's specific water requirement;
- Implement flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines'
- Avoid locating drain inlets in lawn areas, since such inlets tend to be sources of irrigation runoff and the transport mechanism for lawn care products. Design the grading and drainage systems such that drain inlets can be located outside of the lawn area, or include a non-turf buffer around the inlet.

2.4.1 Automated Irrigation Controls

- All irrigation systems shall be equipped and operated by an automatic controller(s) capable of dual or multiple programming;
- Controllers must have multiple cycle start capacity and a flexible calendar program;
- Irrigation controllers shall be equipped with rain shut-off devices (weather based system or soil moisture detection system).

2.5 Low Impact Development

- Include vegetated swales or landscape buffer strips that filter storm runoff from impervious areas.
- Indicate the location of any pervious pavement areas (sidewalks, parking areas, etc.).

3.0 Landscape Maintenance

Currently, NCTD has a landscape maintenance contractor provide landscape maintenance services at transit stations, buildings, and facility maintenance locations on a regular basis. Monthly site inspections are required by the contract to determine the maintenance service frequency. The following maintenance activities are performed for all NCTD owned transit centers, stations, buildings, and maintenance operation locations on an as-needed basis based on the monthly site inspection results.

- Provide water and/or irrigation to landscaped plants
- Pruning, thinning, and trimming trees, shrubs, vines, and ground cover
- Applying mulch
- Mow all lawns
- Fertilize at a minimum of once per quarter
- Clean hardscape areas of debris
- Clean drainage swales
- Minor pest control of plants to mitigate insects, disease, fungus
- Provide rodent control labor to treat gophers, or other rodents

The following landscape maintenance fundamentals are intended to be incorporated by NCTD's landscape maintenance contractor, to comply with the Phase II Small MS4 Permit.

3.1 Pesticide, Herbicide, and Fertilizer Management

Per permit section F.5.f.9.(ii)(b)(2), NCTD created an Integrated pest management (IPM) plan, as an ecosystem-based pollution prevention strategy which focuses on long-term prevention of pests and/or their damage through a combination of techniques such as:

- Biological control
- Habitat manipulation
- Use of resistant plant varieties

The NCTD IPM plan incorporates the following techniques, from section 3.1, and is included as Appendix A.

3.1.1 Reduce Usage

Pursuant to permit section F.5.f.9.(ii)(b)(2)(d), NCTD will limit or replace herbicide and/or pesticide use whenever applicable and appropriate. To eliminate or reduce the need for pesticide use, the following strategies can be used:

- Plant pest-resistant or well-adapted plant varieties
- Provide beneficial organisms for specific pest control (e.g. lady bugs, praying mantis)
- Provide pheromone-based traps or colored sticky cards
- Discourage pests by modifying the site and landscaping design

Additionally, per permit section F.5.f.9.(ii)(b)(2)(c):

- When two or more consecutive days with greater than 50% chance of rainfall are predicted by NOAA, there shall be no application of pesticides and fertilizers.

3.1.2 Limit Coverage

Pursuant to permit section F.5.f.9.(ii)(b)(2)(d), NCTD will limit or replace herbicide and/or pesticide use whenever applicable and appropriate. Pesticides are used only after monitoring indicates they are needed according to established guidelines. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the surrounding environment.

Additionally, per permit section F.5.f.9.(ii)(b)(2)(e), NCTD will limit or eliminate the use of fertilizers within five feet of pavement, twenty-five feet of a storm drain inlet, or fifty feet of a water body.

More information regarding pesticide application may be obtained at the following University of California-Davis (UCD) website: http://www.ipm.ucdavis.edu/WATER/U/index.html (UCD, 2015). More details and procedures are provided in section 3.0 of the NCTD IPM plan.

3.1.3 Green or Natural Alternatives

Pursuant to permit section F.5.f.9.(ii)(b)(2)(d), NCTD will limit or replace herbicide and/or pesticide use whenever applicable and appropriate. IPM educational materials should be distributed to future site residents and tenants. These educational materials should address the following:

- Use of barriers, screens, and caulking to keep pests out of buildings and landscaping
- Physical pest elimination techniques, such as weeding, washing , or trapping pests
- Relying on natural enemies to eliminate pests
- Proper use of pesticides as a last line of defense

More details and procedures are provided in section 3.0 of the NCTD IPM plan.

3.2 Plant and Grass Maintenance

Pursuant to permit section F.5.f.9.(ii)(b)(2)(f), NCTD will reduce mowing of grass to allow for greater pollutant removal, without jeopardizing public safety. Dependent on the type of grass installed, NCTD contractors will be instructed to reduce mowing.

Additionally, per permit section F.5.f.9.(ii)(b)(2)(b), NCTD shall keep clippings and leaves away from reaching waterways and/or streets.

3.3 Irrigation Maintenance

Pursuant to permit section F.5.f.9.(ii)(b)(4), NCTD will minimize irrigation run-off, through proper timing and use to reduce over or under watering.

3.3.1 Minimizing Run-Off

Proper and timely maintenance of the irrigation system can also reduce run-off. Sprinkler head maintenance and/or repair, as well as valve inspections, in conjunction with occasional adjustments will ensure the minimum amount of irrigation water is used. Low flow sprinkler heads can replace old or worn sprinkler heads to reduce the volume of irrigation water. A drip irrigation system can also provide a low flow network that will minimize run-off.

3.3.2 Automated Irrigation Control

Shall be accomplished on a scheduled basis with such frequency and quantity as to promote healthy growth and where such irrigation is not in violation of local irrigation restrictions. Should use sensors (weather-based, soil moisture, etc.) to adjust and/or shut-off irrigation when not required.

3.3.3 Irrigation O&M

Proper operations and maintenance of existing irrigation systems will ensure they operate as designed. By responding to irrigation failures quickly, irrigation run-off can be limited and/or eliminated. Additionally, as plant growth occurs, irrigation devices will need periodic adjustments to ensure proper watering and to limit run-off.

3.4 Proper Disposal of Unused Chemicals

Pursuant to permit section F.5.f.9.(ii)(b)(3), NCTD considers proper disposal of unused pesticides herbicides and fertilizers of the utmost importance to the safety of employees, the public and the environment. Applicable laws require that all pesticide solutions and rinses be applied to target areas according to label directions. These solutions and rinses may also be disposed of at an authorized pesticide disposal site. It is the goal of NCTD that contracted personnel conduct pesticide operations so that disposal of remaining material is not necessary.

Several governmental agencies regulate pesticide disposal. No one agency has comprehensive authority. Agencies involved include the Department of Toxic Substances Control, Department of Pesticide Regulation, Environmental Protection Agency and Occupational Safety and Health Administration. NCTD Contractors shall comply with all relevant laws governing the proper disposal of these materials.

More details and procedures are provided in section 12.0 of the NCTD IPM plan.

4.0 Training and Education

4.1 NCTD Staff

Pursuant to permit section F.5.f.9.(ii)(b)(1), NCTD is in the process of developing a landscape design and maintenance specific training program that will cover the basics tenants as outlined in the above sections, also including NCTD's MS4 General Permit, storm water issues, BMPs, and how they all affect LDM. This mandatory training will be provided to all NCTD staff who are involved in LDM design reviews and maintenance contractor oversight.

4.2 Contractors/Vendors

Pursuant to permit section F.5.f.9.(ii)(b)(1), NCTD will provide all contractors performing landscape maintenance activities, with mandatory training with regards to NCTD's MS4 General Permit, storm water issues, BMPs, and how they all affect LDM.

5.0 References

University of California Davis (UCD), 2015, UC IPM, Statewide Integrated Pest Management Program, website http://www.ipm.ucdavis.edu/index.html

APPENDIX A

Integrated Pest Management Plan

APPENDIX B

NCTD Migitation Area Maps