3.0 WATERSHED IMPLEMENTATION STRATEGY

3.1 Introduction

The outcomes of the Watershed Activity Prioritization by Watershed were summarized in tabular and graphic form at the end of Section 2. The summary tables presented the watershed Priority Water Quality Pollutants (PWQP), the priority sources, and the outstanding data gaps. The priority sector maps presented in Section 2 provide a tool for the City to prioritize the implementation of management actions to address the PWQP and sources identified for each watershed. The identified data gaps provide a basis to develop special studies and integration with permit monitoring to verify pollutant extent, sources of priority constituents, and design storm determination.

The PWQP listed in Table 2-1 and the priority sources listed in Table 2-3 form the basis for the prioritization of watershed activities presented in Section 3. The Source Prioritization list is summarized in Table 3-1. This source list includes the source groups that have been prioritized for all the watersheds. Table 3-2 presents these source groups and their prioritization on a watershed basis. The priorities are presented as high, medium, and low priority. However, all the source groups listed represent priority sources from the complete source list presented in the Baseline Long-Term Effectiveness Assessment Report.

Section 3 presents the City's Watershed Implementation Strategy that uses an integrated and tiered approach to BMP implementation. This approach is discussed further and outlined in Figure 3-1. This approach was developed as part of the Chollas Creek TMDL Assessment (Weston, 2006). Greater detail on the development of this approach is presented in the Assessment document. The City developed this approach to address the multiple PWQP requiring management action based on current and future TMDLs. The integrated approach includes the consideration of these multiple constituents rather than focusing each activity to a specific pollutant. The tiered approach focused on in the early phases of the program on source control, pollution prevention, and runoff reduction measures. As pollutant load is reduced through these measures, the effectiveness of the BMPs is assessed. Effective BMPs are continued and expanded to other sectors, and less effective activities are discontinued. The final tier of BMPs includes more capital intensive with higher community impact treatment train systems. This final tier is implemented following the reduction of pollutant loads from the first two tiers of BMPs with the goal of reducing the size and impact to community of these final treatment BMPs.

Section 3 includes the following key tools for City managers to use in developing, updating and implementing management activities:

- **Tiered BMP Implementation Strategy and List of Watershed Activities** – The overall tiered BMP strategy as outlined above and discuss further is presented graphically in this section. The graphic presents the overall City's approach to TMDL implementation using a phased tiered approach. The approach considers an approximately 20 year period to implement this strategy which emphasizes source control, pollution prevention, and runoff reduction in the initial phases, and the further expansion of successful BMPs based on the effective assessment of first phase activities. In the next phases, treatment BMPs

are first installed as pilots and then expanded where applicable based on effectiveness monitoring. The rain drops on the right represent a potential goal of each tier in reducing the pollutant loads.

The Watershed Activity List presents the current potential activities to address the pollutant and source priorities using the integrated and tiered approaches. This list of Watershed Activities has been segregated by BMP tier. This list provides the basis for the Priority Watershed Activities Implementation Strategy Tool presented later in this section.

- **Baseline BMPs for PWQP and Related Sources** – The table of Baseline BMPs is provided in Appendix A, and is used as a guide for modifying the current City Code and for inspections of these facilities. The Baseline BMP (Appendix A) list includes activities such as good housekeeping and containment to prevent pollutants from entering the urban runoff and storm flows. As the name indicates, these are baseline activities that should be implemented at these facilities to reduce pollutant loads. These BMPs provide a basis for the City to modify the current codes to include specific BMPs that can then be used by enforcement to assure these measures are being taken and proper practices followed. These baseline activities also provide a list of potential behaviors to be assessed as part of the community-based social marketing program which can help to identify which behavior and activity will be most successful in implementing and reducing pollutant load.

- **Priority Watershed Activities – Implementation Strategy Tool** – This tool is presented as a series of flow charts and tables following the Baseline BMPs. The tool consists of a set of three pairs of tables for each BMP Tier (Tier I to III). The first table presented in each set is a flow chart of the steps in implementing each tiered BMP activity that is linked to a final goal at the end of the five-year program planning cycle. The BMP activities listed in these tables correspond to the Watershed Activity List presented in the beginning of Section 3. For Tier I BMPs, the first column of the flow chart identifies the general category of the activity such as Enforcement. The flow chart then presents the first priority steps (second column) of the activity that must be completed prior to proceeding with the additional steps. Following the prioritized first steps are the intermediate steps (third column) that are to be implemented in the order shown. The goals of each of the activities is then shown (final column). Activities that are to be implemented city-wide are identified as compared to those that are watershed specific. For example, the implementation of the Enforcement activity includes several prioritized first steps activities that must be implemented before targeted enforcement is conducted.

  The second table following the flow chart for Tier I BMPs is the key to the prioritization of the implementation of these activities. This second table presents for each Tier I activity category the prioritization of the implementation of the intermediate activities. For example, under the Outreach/Education activity category is listed the modification of outreach tools. According to this second table, the implementation of this activity is based on the prioritized source list developed from Section 2 for all watersheds and presented in Tables 3-1 and 3-2. Since the fact sheets are a *city-wide* activity, the sources

listed are *regional priorities*. As shown on the final column of this table, the fact sheet modification should be prioritized in accordance with Table 3-1 and the high priority source groups identified in Table 3-2 for the Chollas, Tecolote, and La Jolla Watersheds. The fact sheet modifications should use the Baseline BMPs listed in this section. Prioritization of activities may also be based on *watershed specific* priority sources as shown for the surveys and updates to the source lists activity. The watershed specific source list is based on the PWQP for that watershed and the associated likely and unknown sources associated with that constituent as listed in Table 3-2. Prioritization strategy therefore is specific to each Tier I activity.

Following the pair of tables for Tier I BMPs, the tables for the implementation strategy of Tier II BMP is presented. Similar to the first table presented for Tier I, this Tier II priority implementation strategy is a flow chart of steps to be conducted for each Tier II activity. The activities listed in this table correspond to the Watershed Activity List presented in this Section 3. This table presents the first prioritized steps, followed by the intermediate steps, and then finally the goal of the activity over the five year program period. The table following the flow chart of steps for Tier II provides more detail on the expected outcomes of the steps and overall activity as a guide for assessment monitoring and reporting. Because the implementation of Tier II BMPs are prioritized by location (watershed and sub watershed), there are no listing of priorities for these activities. The implementation of Tier II BMPs will be based on the Priority Sector Maps presented in Section 2.

Following the Tier II BMP activity tables are the activity flow chart and more detailed expected outcome table for Tier III BMPs. As with the implementation of Tier II BMPs, the priority implementation strategy for Tier III BMPs is based on the Priority Sector Maps presented in Section 2. The expected outcomes table for the Tier III BMPs can also be used as a basis for the development of the activity assessment program.

3.2 Integrated and Tiered Approach for BMPs

The development of management measures to address the protection goals of this Plan and reduce pollutant loads to the watershed is based on an integrated and tiered approach. The integrated approach addresses both current and anticipated priority constituents in the BMP development. This approach avoids possible retro-fitting of BMPs if they were designed for only specific constituents where multiple PWQP may exist. A tiered BMP implementation program addresses PWQP beginning with source control, pollution prevention, and runoff reduced in the first phase. As based on the effectiveness of these BMPs to reduce loads is expanded. The final tier of implementation is more capital intensive and potentially community impact treatment BMPs. Tier III treatment BMPs are implemented at a later phase where applicable following reductions of pollutant load and runoff volume through less capital intensive and intensive treatment BMPs.

Three tiers of BMP classifications are defined. Tier I BMPs focus on non-structural source control and pollution prevention measures that are designed to reduce the amount of pollutants entering runoff though education, enforcement, and behavioral modification programs.

Tier I – Non-structural BMPs
- Source Control Measures and Pollution Prevention BMPs
- Product Substitution through Legislation
- Effectiveness Monitoring of BMPs
- Integrate Efforts through Information Management
- Public Participation and Community Involvement through Ocean Stewardship

Tier II includes structural BMPs such as infiltration basins, bioretention, and LID techniques to reduce wet and dry weather runoff volumes and further reduce pollutant entry into the receiving waters of the watershed in question. Additionally, Tier II includes source and design studies that will aid in the further identification of pollutant sources and provide design parameters for construction of effective in-line treatment systems as part of Tier III.

Tier II – Structural BMPs
- Soil and Hydrologic Studies, Source Studies, and Determination of Design Storm
- Aggressive Pollutant Source Control in Targeted Areas (e.g. Street Sweeping)
- Implementation of Urban Runoff Reduction LID Techniques
- Diversions
- Effectiveness Monitoring of BMPs
- Integrate Efforts through Information Management
- Ecosystem Assessment Studies To Determine Biological Impacts

Tier III BMPs are infrastructure-intensive structural pollution reduction treatment measures that typically require significant capital investment and/or have potential impacts on surrounding communities.

Tier III – Treatment BMPs
- Property Acquisition and Easements (where necessary)
- Implementation of Treatment BMPs in Targeted Areas where Tier I and Tier II BMPs have been shown not to meet full reduction goals
- Effectiveness Monitoring of BMPs

Effectiveness assessment, monitoring, and data incorporation into the overall information management program are components common to all three tiers. Within each tier, the effectiveness of each BMP program must be monitored in order to assess whether the program is meeting pollution reduction goals. A secondary benefit of effectiveness monitoring is that oftentimes BMP techniques can be modified or pollutant sources can be identified in order to further reduce pollutant loads as time series data becomes available.

Tables 3-3 to 3-8 present the Prioritized Implementation strategy for these watershed activities listed above.

3.3 Tier III Implementation Strategy for Single and Multiple-Pollutant BMPs

The implementation strategy for Tier III BMPs is outlined in Tables 3-7 and 3-8. Table 3-7 provides the steps required for the implementation of these BMPs. Table 3-8 presents the

prioritization process in determining the location and specific application of the BMP. Tier III BMPs include treatment systems that target specific pollutants. In contrast to Tier II Low Impact Development and large scale infiltration BMPs, several of the listed Tier III BMPs target specific pollutants. For example, the Bacteria Treatment BMPs target specifically the reduction of bacteria. Similarly, the Erosion and Sediment Control and the Hydro-modification Management BMPs target primarily sediment. Because the City's implementation strategy uses an integrated and tiered approach, the application of these single-pollutant BMPs is limited to two cases:

1. Sub-watersheds where the known pollutant sources are limited to the specific pollutant being addressed by the treatment BMP; and,
2. Implementation in combination with other BMPs to address all Priority Water Quality Problems (PWQP) in an integrated manner using the tiered process.

Case 1

The first case may apply to sub-watersheds within the San Dieguito watershed that are limited to bacteria as the primary PWQP. Nutrients are also included as a PWQP for San Dieguito due to the 303d listing for Lake Hodges. Sub-watersheds that drain to Lake Hodges would also need to address nutrients if water quality data indicated measurable nutrient loading. The application in other watersheds would depend on water quality data from specific sub-watersheds that indicate a single-pollutant to be above the water quality objectives and constitute a load above the target reduction goals, and all other PWQP are below the targets due to no sources associated with the other PWQP or reduced loading of the other PWQP due to the effectiveness of Tier I and/or Tier BMPs implemented in this sub-watershed.

The selection of locations for the implementation of these pollutant specific BMPs shall be based on known and likely sources of these pollutants that are associated with a single pollutant and pollutant loading data. For example, a bacteria treatment BMP could be located downstream of identified sources of bacteria where Tier I and II BMPs have been implemented, but have not met the required load reduction goals for bacteria and the loading of other PWQP has been addressed through these Tier I and II BMP or sources of these PWQP are not present. The bacteria treatment BMP would also need to be sited close to the outfall to address re-growth issues.

A potential configuration for this condition may include a sub-surface vault located just upstream of the outfall with sufficient head differential and gross solids removal prior to flows passing through media filters or other treatment processes to reduce bacteria concentrations prior to discharge close to the existing outfall.

The other example for the use of a single-pollutant BMP is erosion and sediment control and hydro-modification management BMPs located downstream of older developments that have not installed peak flow control BMPs and contribute to sediment loading from increased peak flows in downstream natural channels. These BMPs may include bioengineering solutions as well as storm water collection and retention BMPs to reduce flows velocities and allow for removal of fine grain sediments associated with water quality issues. These BMPs would need to be implemented downstream of areas where water quality sampling has indicated that sediment is the single PWQP based on limited source for the other PWQP or the loading has been addressed

through Tier I and II BMPs. This would need to be supported by the results of dry weather, MS4, and other monitoring programs. BMPs should be located first in the prioritized sectors, but may be located in lower priority sectors where this case exists and pollutant sources have been identified and not cost effectively addressed through Tier I and II BMPs. This case is however limited in application.

Case 2

The second case listed is more aligned with the overall integrated approach and is more widely applicable. Examples of this case include the implementation of Bacteria Treatment BMPs in combination with aggressive street sweeping, trash segregation devices, and targeted outreach and enforcement. This integrated approach example addresses metals and sediment through aggressive street sweeping and bacteria loading through the trash segregation devices and Bacteria Treatment BMPs. Bacteria treatment BMPs are typically implemented in combination with gross solids removal using a erosion and sediment control/hydromodification BMP or a Continuous Deflective Separator (CDS) unit. Tier I source control and pollution prevention would also be implemented as outreach tools targeted at activities and sources that have the greatest likelihood of successful load reduction through the community-based social marketing process. Increased inspections to foster change of targeted behaviors and implementation of the baseline BMP listed in Appendix A would also be part of this integrated approach. The location of Bacteria Treatment BMPs will still need to consider re-growth issues and therefore may have limited application unless near a storm drain outfall.

Another example of this second case application is the implementation of sediment reducing erosion and sediment control/hydromodification BMP downstream of a mixed use drainage area with potential for sediment loading. The implementation of this erosion and sediment control/hydromodification BMP would be implemented with targeted source control and pollution prevention activities to control the source of sediment that may include outreach to residences and landscapers. Bacteria loading would also need to be addressed unless specific water quality data indicated that this pollutant was below the acceptable regulatory targets. Otherwise, the downstream erosion and sediment control/hydromodification BMP would be implemented with upstream Tier I and II BMPs to address bacteria loading in a cost effective manner. These may include runoff reduction programs or increased inspections of commercial facilities whose activities have been identified as sources of bacteria. The implementation of applicable sediment control BMPs at storm drain outfalls should also consider hydro-modification requirements by also reducing the sustained peak flow into receiving waters that could result in additional sediment loading. These requirements may likely increase detention times and outflow controls.

It is therefore the intent of the Watershed Activity Implementation Strategy to implement multiple BMPs in an integrated and tiered manner as a cost effective solution to meeting water quality goals within the City's jurisdiction. Source control and pollution prevention BMPs are generally the most cost effective and should be implemented first, but may be implemented in combination with Tier II and targeted Tier III BMPs to achieve the overall load reduction goals.

The location of the single-pollutant Tier III BMPs therefore in most cases needs to be coordinated with the Tier I and II activities that are prioritized to higher priority sectors and

identified sources. The location of Tier III multiple-pollutant BMPs should generally be prioritized to higher priority sectors and within drainage areas where Tier I and II BMPs have been shown not meet the targeted pollutant load reductions in a cost effective manner. In higher priority watersheds where TMDLs are in-place or anticipated in the near future (e.g. Chollas Creek, Tecolote, and La Shores Watersheds), a Phase I pilot Tier III treatment BMP program is planned. The location of these Phase I Tier III Treatment BMPs will focus on City-owned property. The objective of these pilot BMPs is to assess the cost effectiveness of these multi-pollution systems to meet the TMDL requirements. A design storm is required for the implementation of these BMPs. Within these priority watersheds, single-pollutant Treatment BMPs are not proposed as part of this Phase I program. However, they may be used as part of a treatment train to address all the PWQP in an integrated approach. For example, the Bacteria Treatment BMP may be applied as one part of a treatment train process that would also include removal of the other PWQP for the specific watershed.

It should be emphasized that the prioritization of the location of BMPs using an integrated approach has already been completed using the prioritization process presented in Section 2. This prioritization process is however based on available water quality data. As additional data is obtained through the MS4 and source identification sampling programs as required in the current Storm Water Permit, prioritization of sub-drainage areas within the watersheds can be more accurately determined. Through these results, the City can identify whether a single- or a multiple-Treatment BMP is required at the sites from the inventory of City-owned sites that have been identified for potential BMPs. Sites can then be prioritized by the amount of pollutant load reduction achieved. Where data exists currently on a sub-drainage area basis for sites that have been identified for potential Treatment BMPs, sites should be prioritized based on their integration with Tier I and II activities as discussed above, and for the amount of load reduction achieved. The overall prioritization process as outlined has been developed to provide flexibility to available resources.

Finally, the approach to the location of Tier II LID and large infiltration projects are generally different than Tier III single-pollutant Treatment BMPs because LID projects address multiple-pollutants. The location of LID projects will be more focused on the site geotechnical conditions. Large scale infiltration project sites can be modified to capture and reuse storm water if the geotechnical conditions are not favorable for significant infiltration.

3.4 Preliminary Site Selection Criteria for LID Tier II and Tier III Projects

Preliminary site selection criteria have been developed to provide a systematic and standard approach to identifying favorable sites for LID Tier II and Tier III Treatment BMPs. The Interim Site Selection Guidelines and Sizing Criteria for Road and Curbside Infiltration Planter and Pervious Pavement LID projects that have been used for the initial LID projects presented in Section 4 are provided in Appendix B. These guidelines provide a basis for the site selection and design of these initial LID projects. These preliminary guidelines provide an initial step to the development of LID site selection and design criteria that are being developed by the City for new and in-fill projects.

Also provided in Appendix B are the site selection criteria used to evaluate available City-owned properties for the location of Tier II LID and Tier III Treatment BMPs. The City is developing a GIS database of the City-owned properties from several data sets including municipal sites and sites that have been identified by the City real-estate department as available. These criteria were used to select a set of priority sites for follow-up field inspections. These criteria include multiple factors that are then compared between the sites, and a ranking is developed based on this comparison. This preliminary ranking is a desk-top review based on available site data (aerial maps, parcel maps and information, utility maps, Priority Sector maps, etc.). The top ten percent ranked sites are then identified for site inspection to verify the site conditions. Field observations are noted and added to the database. Based on the field inspections, sites are then prioritized for further investigation. Sites that are identified for infiltration LID projects are targeted for further geotechnical investigations prior to initiating the design process.

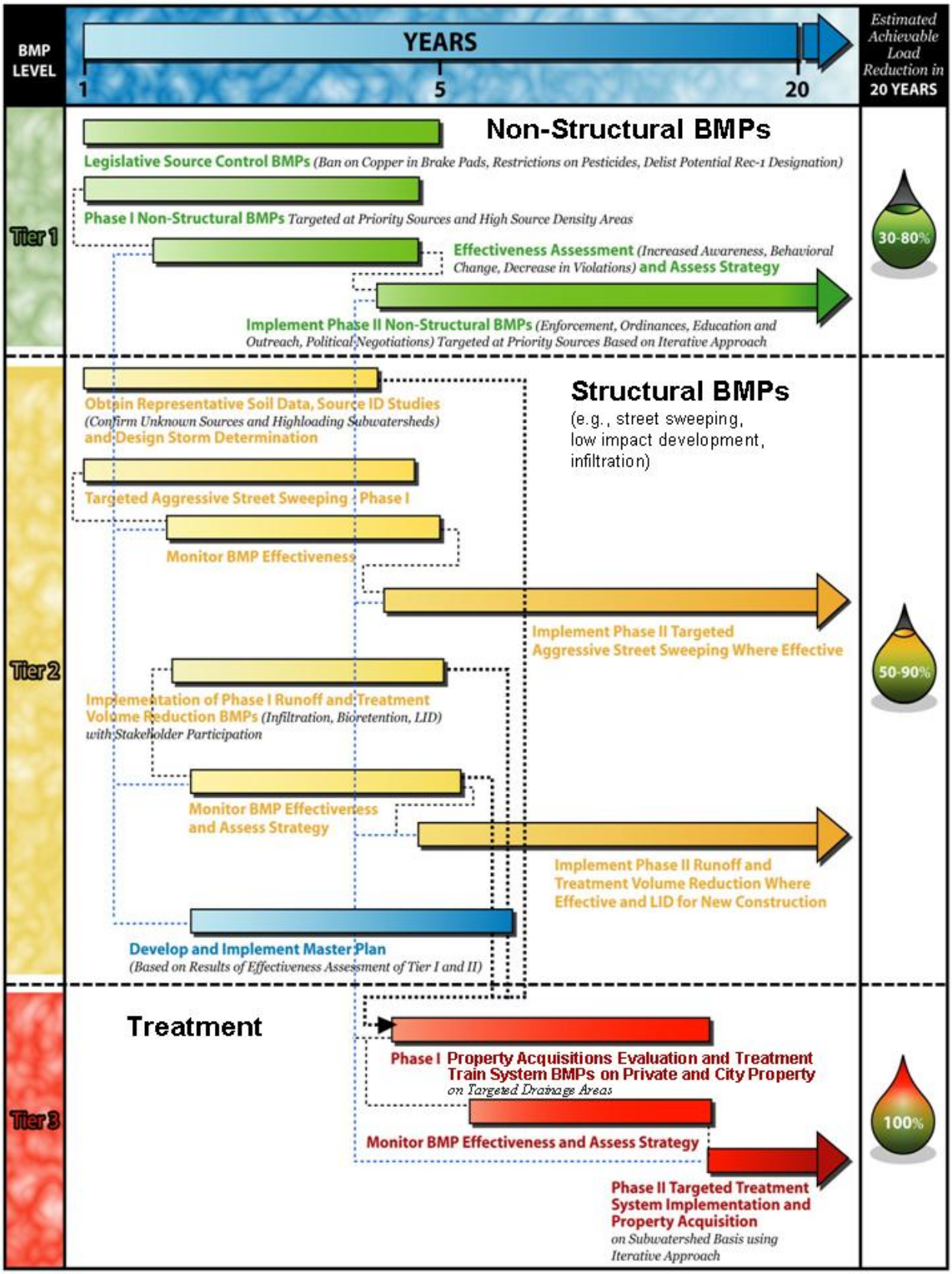

Figure 3-1. Tiered BMP Implementation Strategy

Table 3-1. Source Prioritization List

Priority Source List
Industrial Facilities (1) - (Metals)
Commercial Auto-Related Facilities (2) - (Metals and Sediment)
Residential Activities - Home Auto Activities - (Metals)
Residential Activities - Dog Waste, Trash Management, Landscaping Waste Management – (Bacteria and over irrigation)
Roads, street, Highways and parking facilities - (Metals, Sediment and Bacteria)
Eating and Drinking Establishments - Bacteria
Municipal Facilities (3) - (Metals, Sediment, Nutrients, Bacteria and Pesticides)
Animal Related Facilities - (Nutrients, Bacteria, Sediment and Pesticides)
Golf Courses, Parks and Recreational Facilities - (Nutrients, Bacteria, Sediment, Pesticides and Over Irrigation)
Commercial Landscaping - (Nutrients, Bacteria, Sediment, Pesticides and Over Irrigation)
Commercial Pest Control - Pesticide Management - (Pesticides)
Residential Activities - Pesticide Management - (Pesticides)
Residential Activities - Landscaping and Construction Activities - (Sediment)
Marinas and Boat Repair, Fueling, and Maintenance - (Metals and Bacteria)
Construction Contractors - Home and Commercial Improvement - (Sediment)

1) Chemical and allied products; fabricated metal; primary metal and motor freight
2) Auto mechanical repair, maintenance, fueling or cleaning; equipment mechanical repair, maintenance, fueling and cleaning; automobile and other vehicle body repair and painting; mobile automobile or vehicle washing; ; auto parking lots and storage facilities; and retail and wholesale fueling
3) Corporate Maintenance and Storage Yards, Landfills, Water and Wastewater Treatment Facilities

Table 3-2. Watersheds and Prioritized Source Groups

Watersheds/ Prioritized Sources of PWQP	Eating and Drinking Establishments	Residential Areas and Activities (1)	Commercial Landscaping	Animal related facilities	Golf Courses, Parks, Recreational facilities and Zoos	Municipal facilities and Activities (2)	Auto related facilities (3)	Industrial facilities (4)	Roads, Streets, Highways and parking facilities	Pest Control services	Construction sites/General Contractors	Priority Water Quality Problems
San Diego Bay Watershed - Chollas Creek	**H**	**H**		**H**	**M**	**M**			**H**	**L**	**M**	Bacteria, Heavy Metals, Sediment and Pesticides
Mission Bay Watershed - Tecolote	**H**	**H**	**H**	**M**	**M**	**M**	**H**	**M**	**H**	**L**	**M**	Bacteria, Heavy Metals, Sediment, Nutrients and Pesticides
Mission Bay Watershed - La Jolla	**H**	**H**	**H**		**H**	**M**	**M**		**H**	**L**	**M**	Bacteria, Heavy Metals, Sediment, and Pesticides
Mission Bay Watershed – Miramar	**H**	**H**	**H**	**M**	**M**	**M**	**H**	**M**	**H**	**L**	**M**	Bacteria, Heavy Metals, Nutrients and Pesticides
Los Peñasquitos	**H**	**H**	**H**	**M**	**H**	**M**	**L**		**H**	**L**	**M**	Bacteria, Sediment, Nutrients and TDS
San Diego River - Lower San Diego	**H**	**H**	**H**	**M**	**H**	**M**	**L**		**H**		**H**	Bacteria, Trash, Sediment, Nutrients and TDS
San Dieguito	**H**	**H**	**H**	**H**	**H**	**M**	**L**		**M**		**M**	Bacteria, Nutrients and TDS
Tijuana - Tijuana Valley	**H**	**H**	**M**	**H**	**M**	**M**	**H**	**H**	**H**	**M**	**H**	Bacteria, Trash, Organic Compounds, Heavy Metals, Sediment, Nutrients, Pesticides and TDS

1) Home automobile associated activities, home and garden care activities and solid waste management
2) Corporate Maintenance and Storage Yards, Landfills, Water and Wastewater Treatment Facilities
3) Auto mechanical repair, maintenance, fueling or cleaning; equipment mechanical repair, maintenance, fueling and cleaning; automobile and other vehicle body repair and painting; mobile automobile or vehicle washing; Boat Repair; auto parking lots and storage facilities; and retail and wholesale fueling
4) Chemical and allied products; fabricated metal; primary metal and motor freight

H - Highest Priority
M - Next Higher or Medium Priority
L - Lower Priority

NOTE: These priority ratings for the sources listed should be used as guidance for Tier I activity planning at the beginning of the five year planning process. These priorities are based on Threat to Water Quality ratings for the PWQP, number of sources and best professional judgment. These priorities should be reevaluated as data is obtained from source studies that will focus on verifying the loading potential of the sources and through the Community-based Social Marketing surveys that will identify the specific activities that are pollutant generating.

Watershed Activity List

TIER I: ***POLLUTION PREVENTION AND SOURCE CONTROL***

Basin Plan Beneficial Use Designation Correction[*]: Identify and delete obsolete/inaccurate Beneficial Use (BU) designations in Basin Plan to allow for concentration of City efforts on achievable BU designation restoration and protection

Product Substitution: Identify products whose use contribute to pollutant loading and water quality degradation; coordinate with appropriate industry groups to implement voluntary movement or legislation towards use of substitute products less harmful to water quality

Watershed Advertisement[*]: Purchase ad space/time (billboards, transit shelters, radio, television, print) to broadcast messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems

Targeted Outreach Materials[*]: Develop outreach materials that are pollutant-, source-, activity-, and audience-specific and distribute strategically to achieve increased awareness of urban runoff pollution and elicit appropriate behavioral changes

LID Construction Outreach[*]: Inform public of water quality–related capital improvement projects coupled with messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems in project area

Municipal Code Modification: Review and update ordinances to promote water quality–friendly behaviors

Targeted Enforcement: Focus enforcement efforts by some criteria (e.g., land use, facility type, activity, geography, audience, etc.) to address identified high priority water problems

Targeted Facility Inspections (with education/outreach): Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus facility inspections and tailor education/outreach efforts to those problem facilities

Community-Based Social Marketing Pilots: Select specific behaviors among businesses and residents that are detrimental to water quality and identify factors sustaining those behaviors; develop pilot education and outreach programs that specifically address those factors to determine which programs are most effective in eliciting behavioral changes for broader implementation

Inspection-Generated Enforcement: Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus storm water–associated inspections and enforcement against problem facilities

Enforcement Referrals: Identify problem facilities and activities exempt from Municipal Code enforcement/prosecution (e.g., schools and upstream sources outside of City) and refer to appropriate agency or jurisdiction for corrective action

Doggie Bag Dispenser Installation: Identify areas with pet waste problems and install dispensers/promote pet waste collection to reduce bacterial loading

TIER II: ***RUNOFF VOLUME AND POLLUTANT REDUCTION***

Trash/Debris Cleanup: Sponsor local organizations' cleanup efforts to remove litter from public areas and waterways before being washed out by runoff into local water bodies

Homeless Encampment Removal: Sponsor local organization efforts to identify and eradicate illegal human settlement camps along water bodies impaired for bacteria, metals, and trash

Targeted Street Sweeping: Use specialized street sweepers and/or increase street sweeping efforts in areas identified as metals and trash high loading areas due high volumes of vehicular and human traffic and activity to reduce the accumulation of metals and trash before washed into MS4 and local water bodies via runoff

Smart Irrigation Control Incentive Program: Implement program to disseminate information and promote installation of devices through rebates or giveaways to reduce over-irrigation and prevent irrigation flows from leaving landscaped areas, thereby reducing dry weather runoff volume with capacity to convey pollutants

Downspout Redirection Incentive Program: Implement program to disseminate information and promote redirection of downspouts to landscaped areas for infiltration of roof runoff, thereby reducing runoff volume with capacity to convey pollutants

Rain Barrel Incentive Program: Implement program to disseminate information and promote installation of rain water collection containers through rebates or giveaways to harvest rain water for landscaping irrigation and other non-potable uses, thereby reducing runoff volume with capacity to convey pollutants

Roof Rain Water Harvesting/Reuse Incentive Program: Disseminate information to promote installation of roof and plumbing systems to capture rain water for non-potable reuse within dwellings, thereby reducing runoff volume with capacity to convey pollutants; identify municipal facilities to pilot and study such systems

Inlet Trash/Debris Segregation BMP: In conjunction with targeted street sweeping, install inlet devises to capture trash/debris prior to conveyance into local water bodies

Green Street – Infiltration[**]: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along residential right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

Green Mall – Infiltration[**]: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along commercial/industrial right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

Green Lot – Infiltration[**]: Replace asphalt paving of parking lots with porous asphalt paving and install planter boxes in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the "first flush" of urban runoff

TIER III: *RUNOFF TREATMENT*

Bacteria Treatment BMP: Install devices or facilities to remove bacteria from runoff before discharge from MS4 and into receiving water bodies

Dry Weather Diversion: Install inlet system to redirect dry weather runoff into sewage system for treatment instead of directly discharging often pollutant-laden dry weather and "first flush" flows into receiving water bodies

Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System: Install inlet devices to remove gross solids and filter other pollutants, such as oil and bacteria, from low-flow runoff before discharge into MS4

Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System: Install devices primarily on City property to capture and temporarily store storm flows to allow for settling of pollutants and then treat/filter water before discharge

Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System: Construct comprehensive and large-scale system on City and/or private property to capture and temporarily store large amounts of storm flows for settling of pollutants and then treat/filter water before discharge

Hydro-Modification Management BMP: Determine targeted watershed and prioritized drainage areas for erosion and sediment controls based on comparison of estimated "undeveloped" sediment loadings versus current load reduction requirements and requirements for reduction in hydro-modification of downstream channels

Erosion/Sediment Control BMP: Identify specific sites with erosion/sediment problems and engineer and construct site-specific structural solutions that reduce runoff flow velocity and allow for settling of suspended solids

*Not considered load reduction/source abatement activity
**See graphics

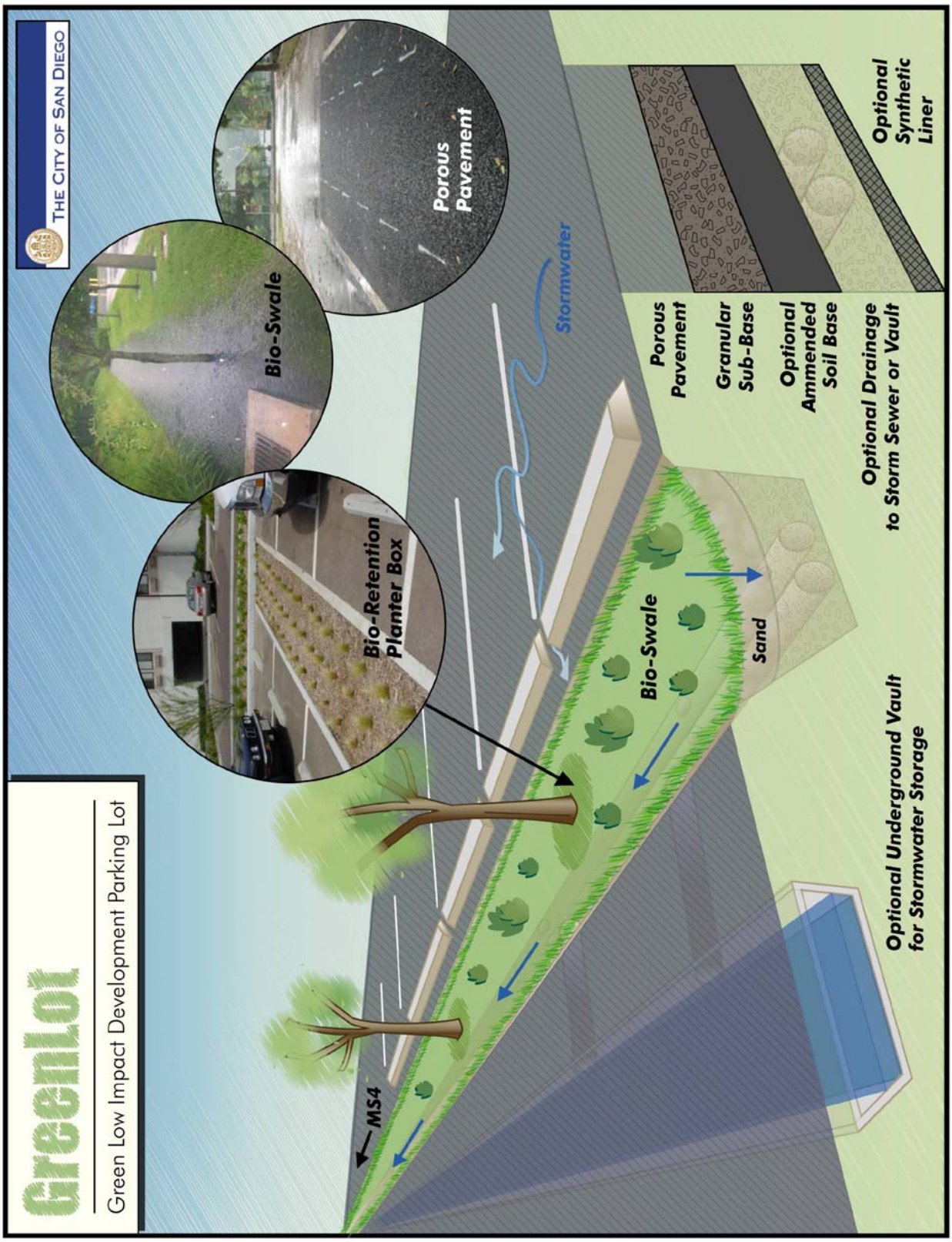

Figure 3-2. Green Low impact development parking lot

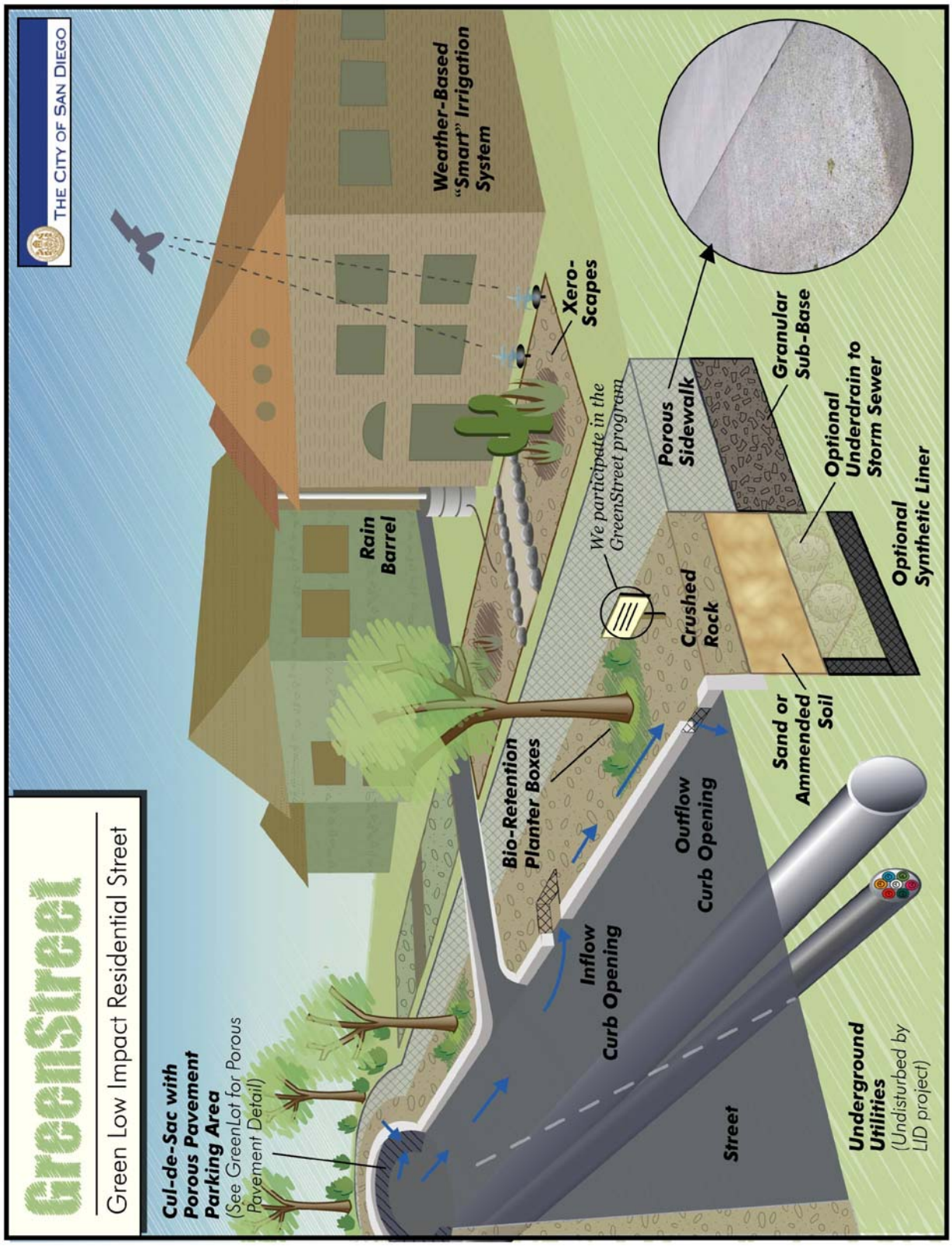

Figure 3-3. Green low impact residential street

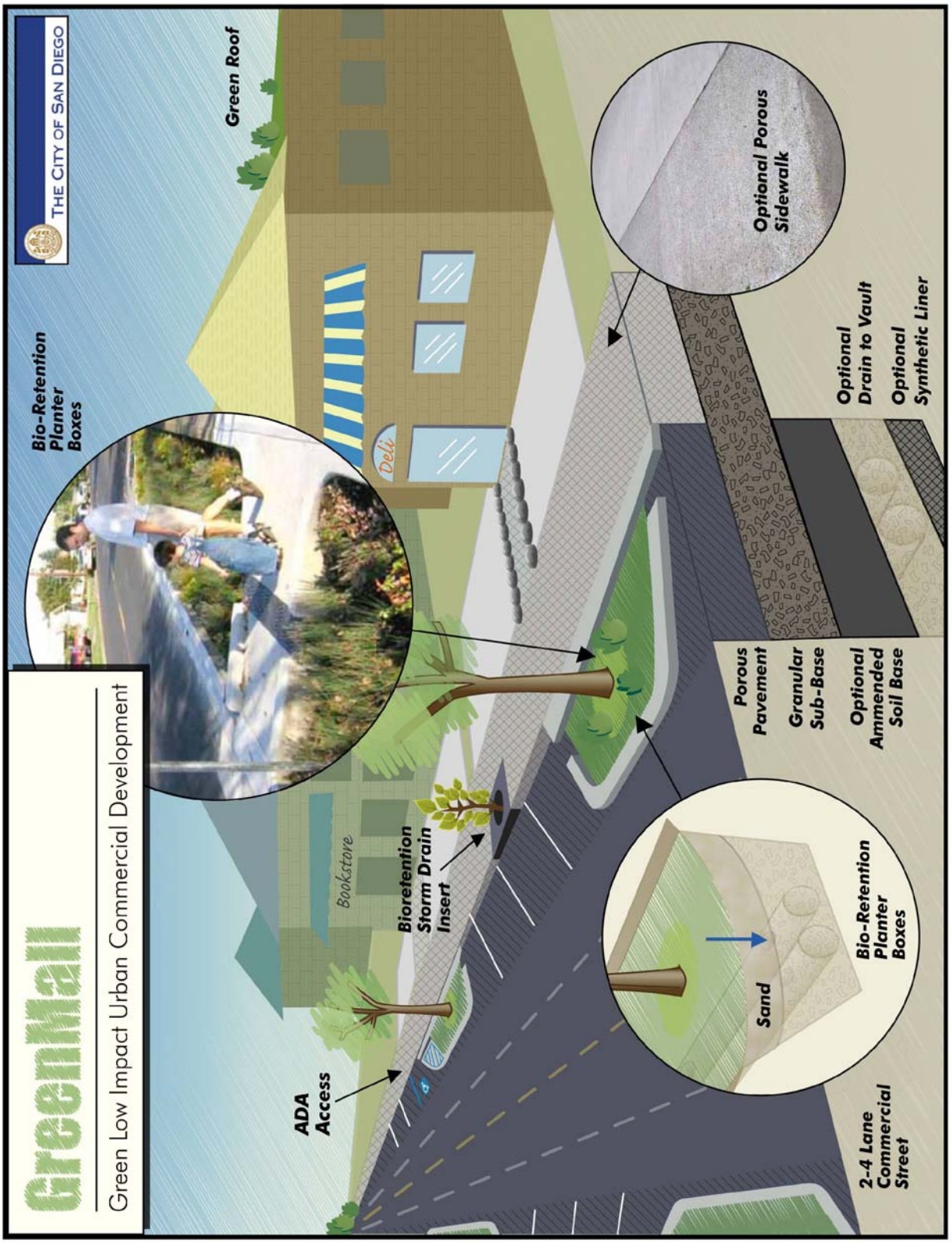

Figure 3-4. Green low impact urban commercial development

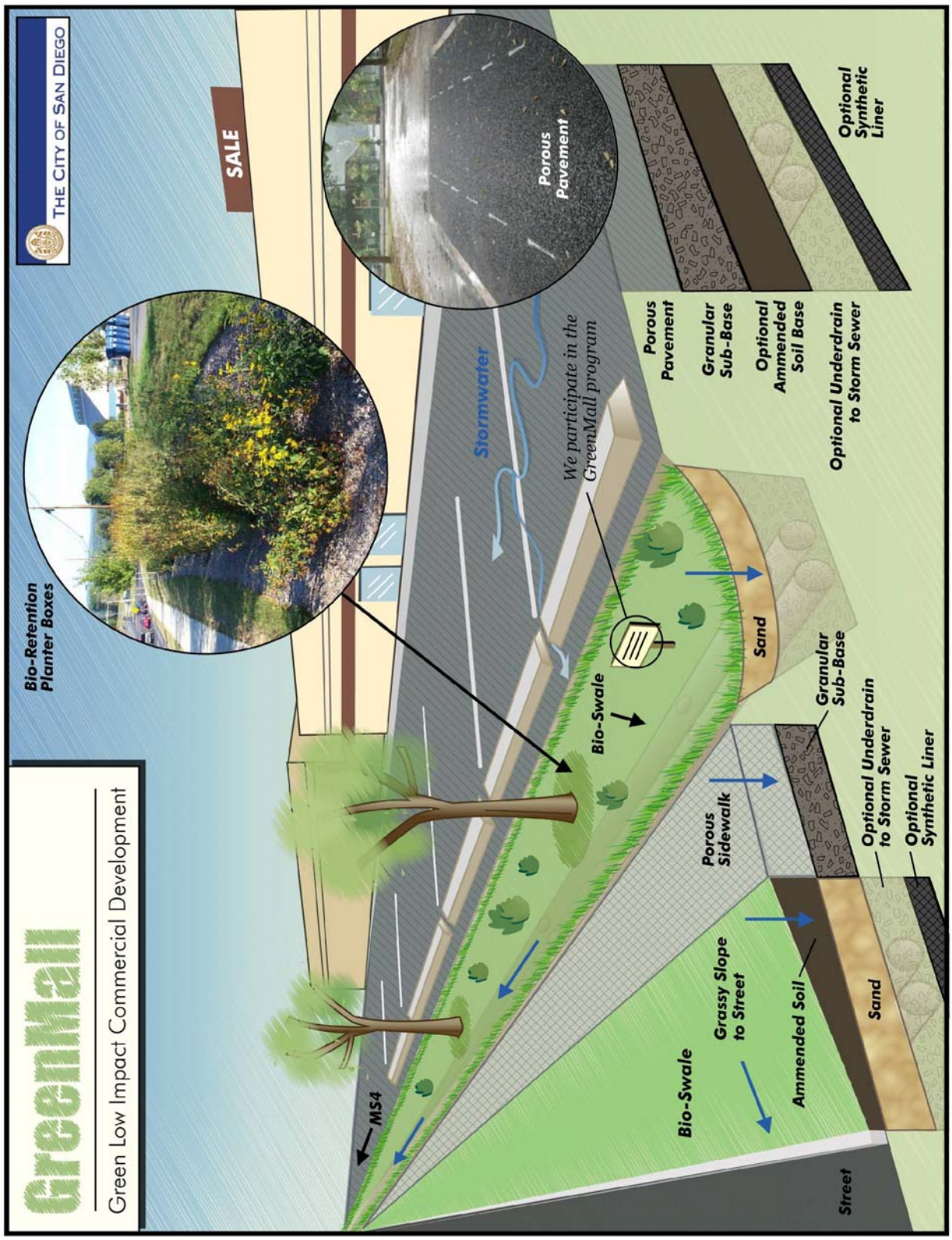

Figure 3-5. Green low impact commercial development

Table 3-3. Priority Watershed Activities – Implementation Strategy: Tier I Best Management Practices

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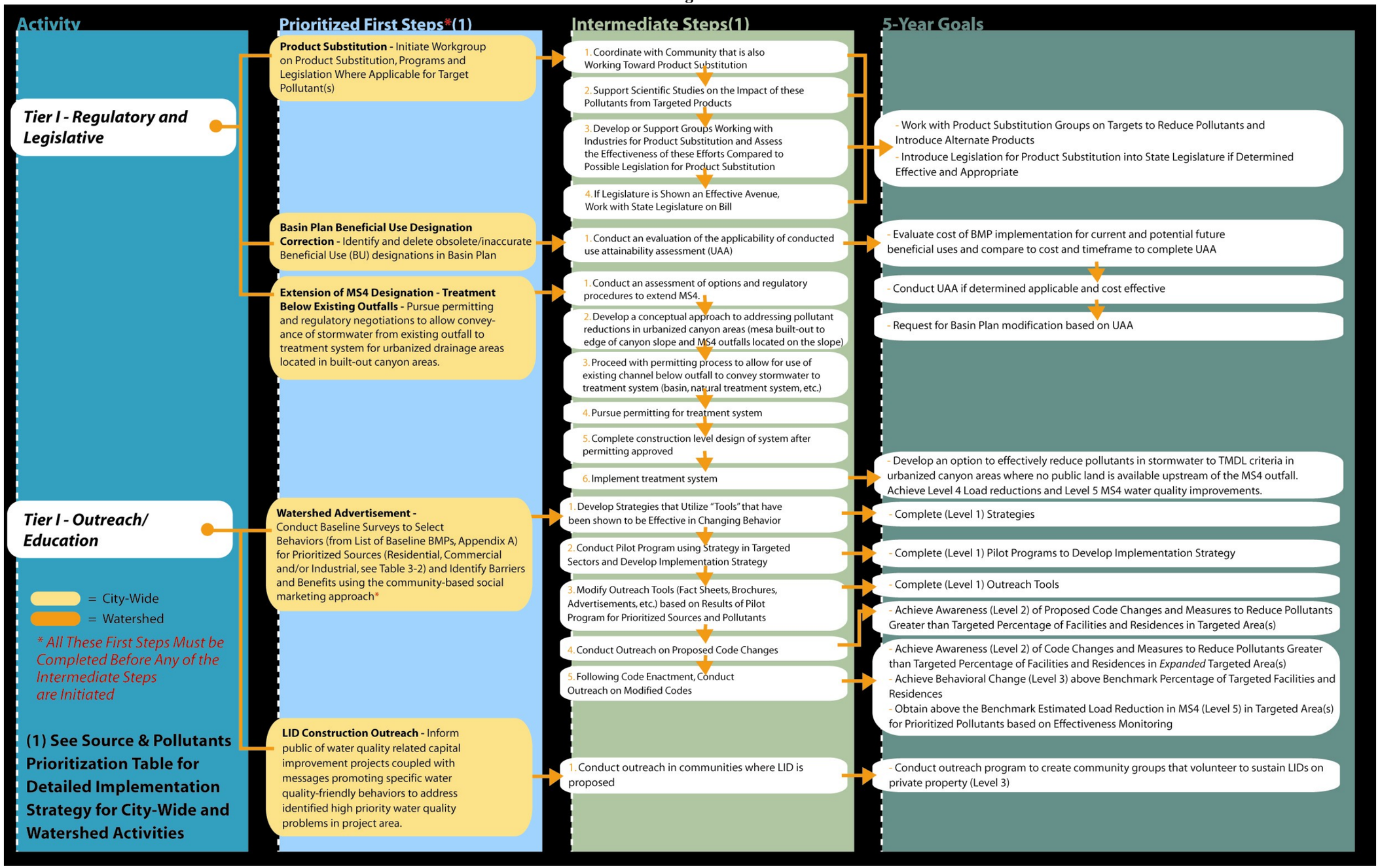

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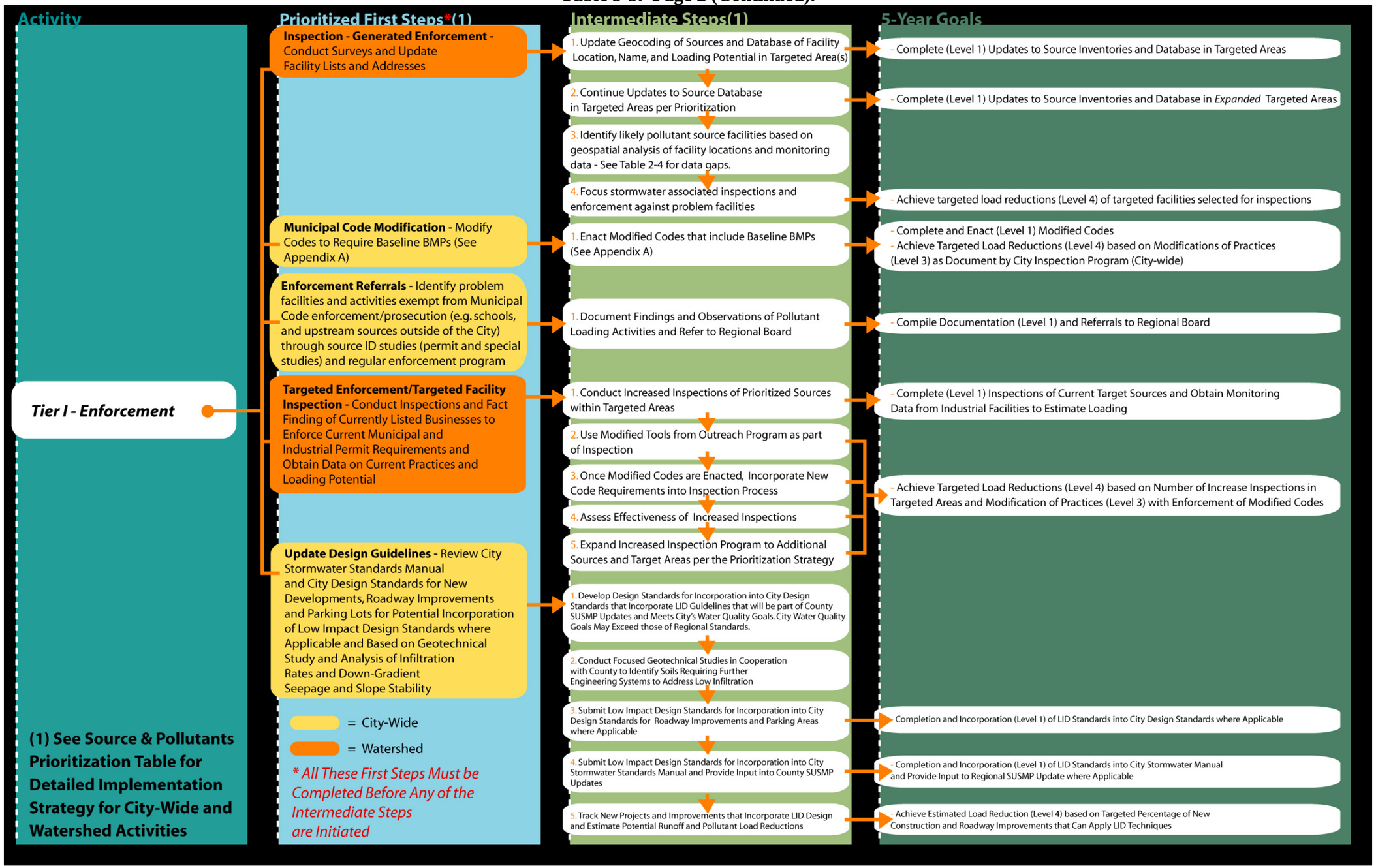

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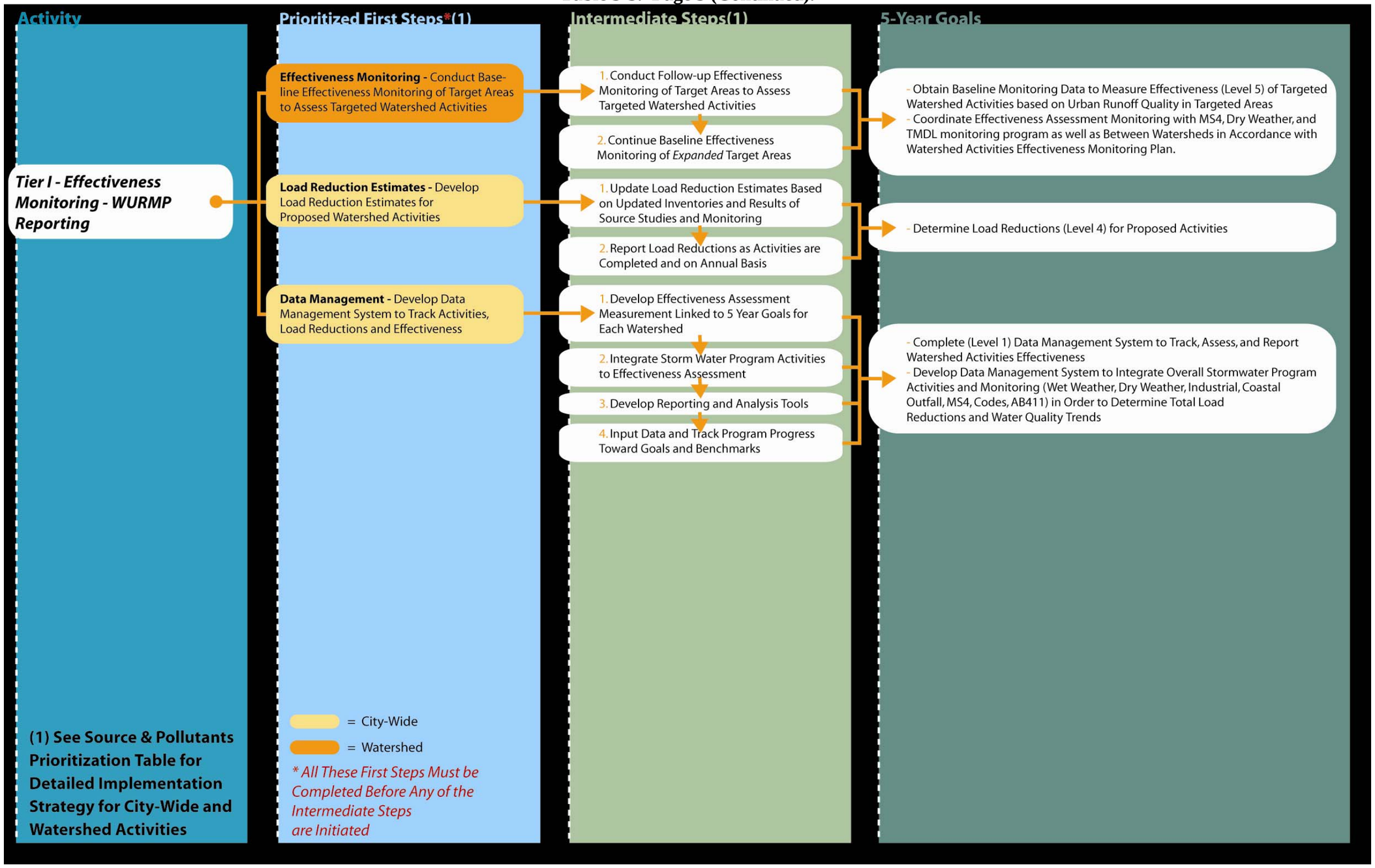

Table 3-4. Priority Watershed Activities – Prioritization Strategy – Tier I Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS: TABLE 1**	PRIORITIZATION (LISTED IN DESCENDING PRIORITY)
Regulatory and Legislative	**Product Substitution –** Initiate Workgroup on Product Substitution Legislation for Target Pollutant(s)	1. Copper in Brake Pads 2. Copper in Construction Materials 3. Zinc in Galvanized Metals 4. Synthetic Pyrethroids (Based on Further Study)
	Basin Plan – Identify and delete obsolete/ inaccurate Beneficial Use (BU) designations in Basin Plan	1. Conduct Use Attainability Assessment (UAA) 2. Modify Basin plans based on UAA
	Extension of MS4 Designation – Treatment Below Existing Outfalls	1. Chollas Creek Watershed 2. Tecolote Creek Watershed 3. Expand City-Wide
Outreach/Education	**Modify Outreach Tools** (Fact Sheets, Brochures, Advertisements, etc.) for Prioritized Sources and Pollutants	Implement the modification of City-Wide Outreach Tools for the Priority Sources listed in Table 3-1. The priority for the specific source groups on a City-Wide basis should use the Source Priorities as listed in Table 3-2 for the Chollas, Tecolote and La Jolla Watersheds as a basis for targeting higher priority sources first, followed by the high priority sources in the other Watersheds.
	Watershed Advertisement – Conduct Surveys and Update Facility Lists and Addresses Also Conduct **LID Construction** outreach to inform the public of the water quality related Capital improvement Projects	Prioritized by Sectors identified on the Watershed Maps (Sector 1 is Highest in Priority) and Watershed Prioritized Source Groups, as listed by Watershed in Table 3-2
Enforcement	**Inspection-Generated Enforcement** Conduct Surveys and update facility list and addresses.	Prioritized in accordance with Source Prioritization List (see Table 3-2) and priority sectors identified in the Watershed Maps.
	Municipal Code Modification -Modify Codes to Require Baseline BMPs (See Appendix A)	The code modifications should be conducted concurrently for the Priority Source listed in Table 3-1. If this activity is to be completed in phases, the source identified as high priority is Table 3-3 should be addressed first.
	Enforcement Referrals –Identify problem facilities and activities exempt from municipal code enforcement/prosecution (e.g. schools, and upstream sources outside the city)	Prioritized by focusing first in the Chollas, Tecolote and La Jolla Watersheds and using the Prioritized Sources listed in Table 3-1 that are exempt.
	Targeted Enforcement - Conduct Inspections and Fact Finding of Currently Listed Businesses to Enforce Current Municipal and Industrial Permit Requirements and obtain Data on Current Practices and Loading Potential	Prioritized by Sectors Identified on the Watershed Maps (Sector 1 is Highest in Priority) and Watershed Targeted Source Groups (See Table 3-2)
	Updating design guidelines Review SUSMP and City Design Standards for New Developments, Roadway Improvements and Parking Lots for Potential Incorporation of Low Impact Design Standards where Applicable and Based on Geotechnical Study and Analysis of Infiltration Rates and Down-gradient Seepage and Slope Stability	1. New Development and Redevelopment Projects 2. Municipal Roadways, Streets and Parking Lots
Effectiveness Monitoring – WURMP Reporting	**Effectiveness Monitoring** - Conduct Baseline Effectiveness Monitoring of Target Areas to Assess	Prioritized by Tier I and II BMP implementation which is prioritized based on Sectors Identified on the Watershed Maps (Sector 1 is Highest in Priority) and Watershed Targeted Source Groups (see Table 3-

Table 3-4. Priority Watershed Activities – Prioritization Strategy – Tier I Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS: TABLE 1**	PRIORITIZATION (LISTED IN DESCENDING PRIORITY)
	Tier I Activities	2). As program and data management system are developed, effectiveness monitoring can be more focused using existing data from similar activities, source and pollutants.
	Develop Load Reduction Estimates for proposed Tier I Activities **(Load Reduction Estimates)**	Prioritized in accordance with Tier I and II BMP implementation schedule and regulatory reporting requirements.
	Develop **Data Management** System to Track Activities, Load Reductions and Effectiveness	Data Management System to be developed as program is developed. Data to be entered as activities are completed.

** All These First Steps must be completed before any of the Intermediate Steps are Initiated
Prioritized First Steps in RED are City-Wide Activities

Table 3-5. Priority Watershed Activities – Implementation Strategy: Tier II Best Management Practices

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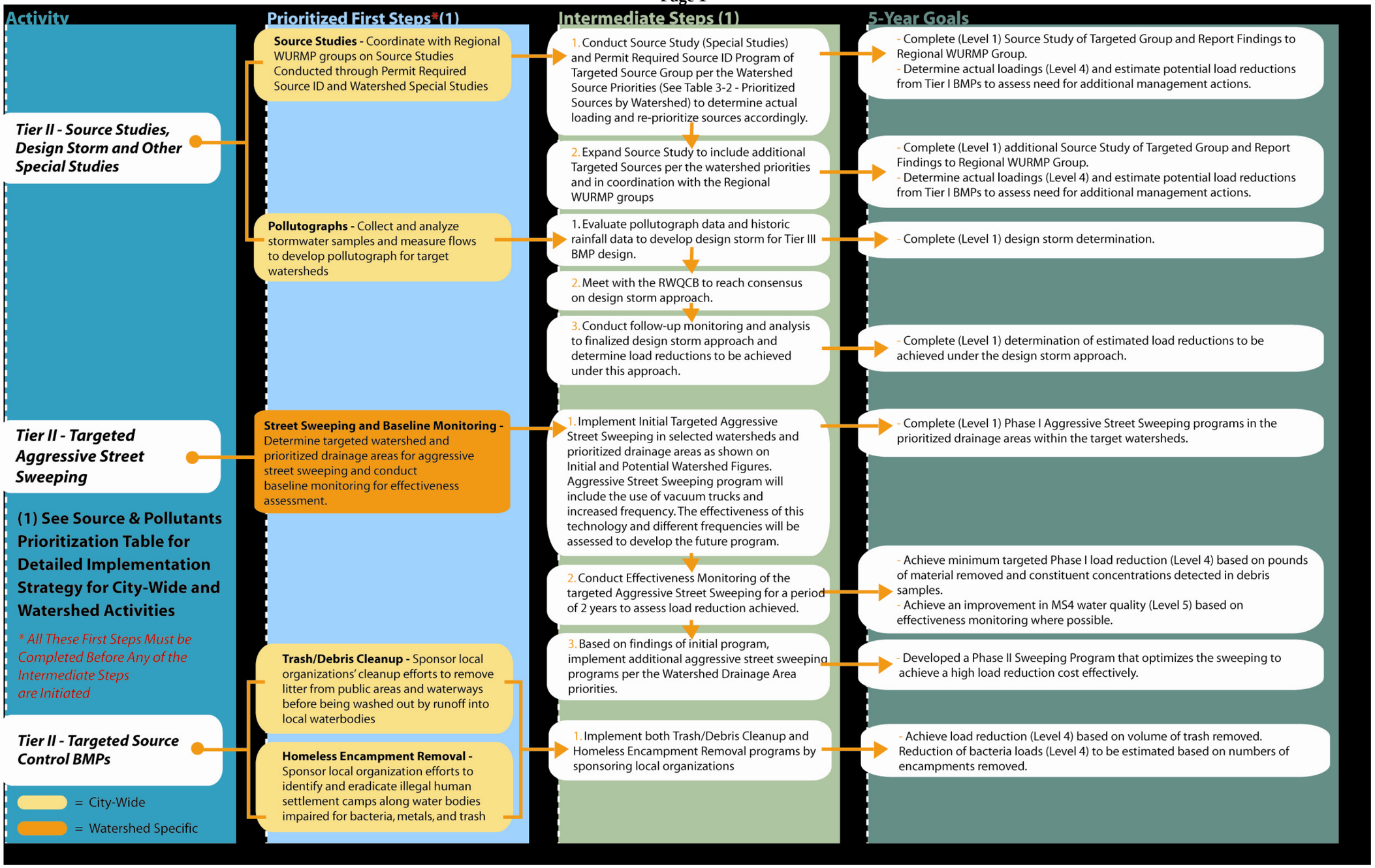

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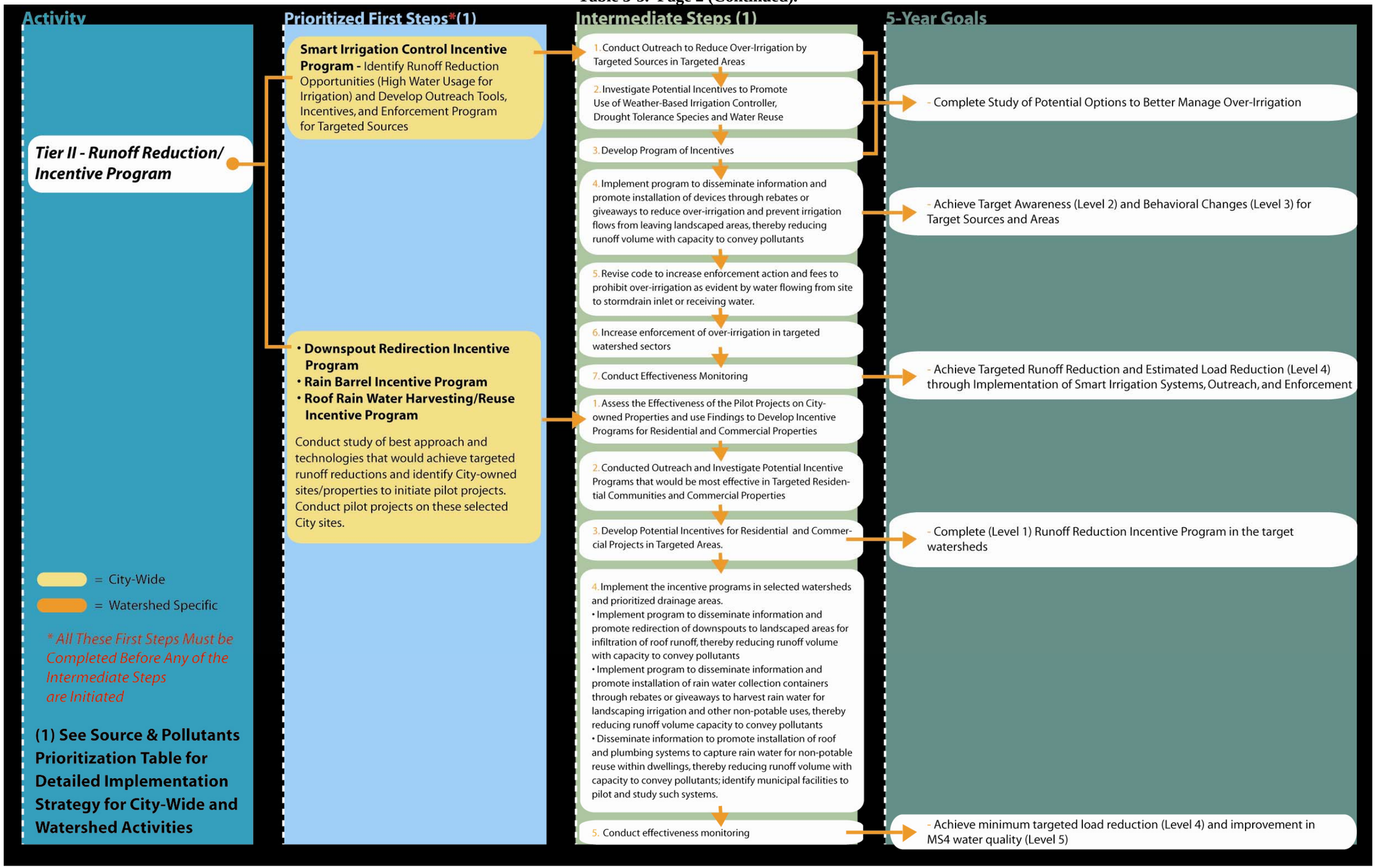

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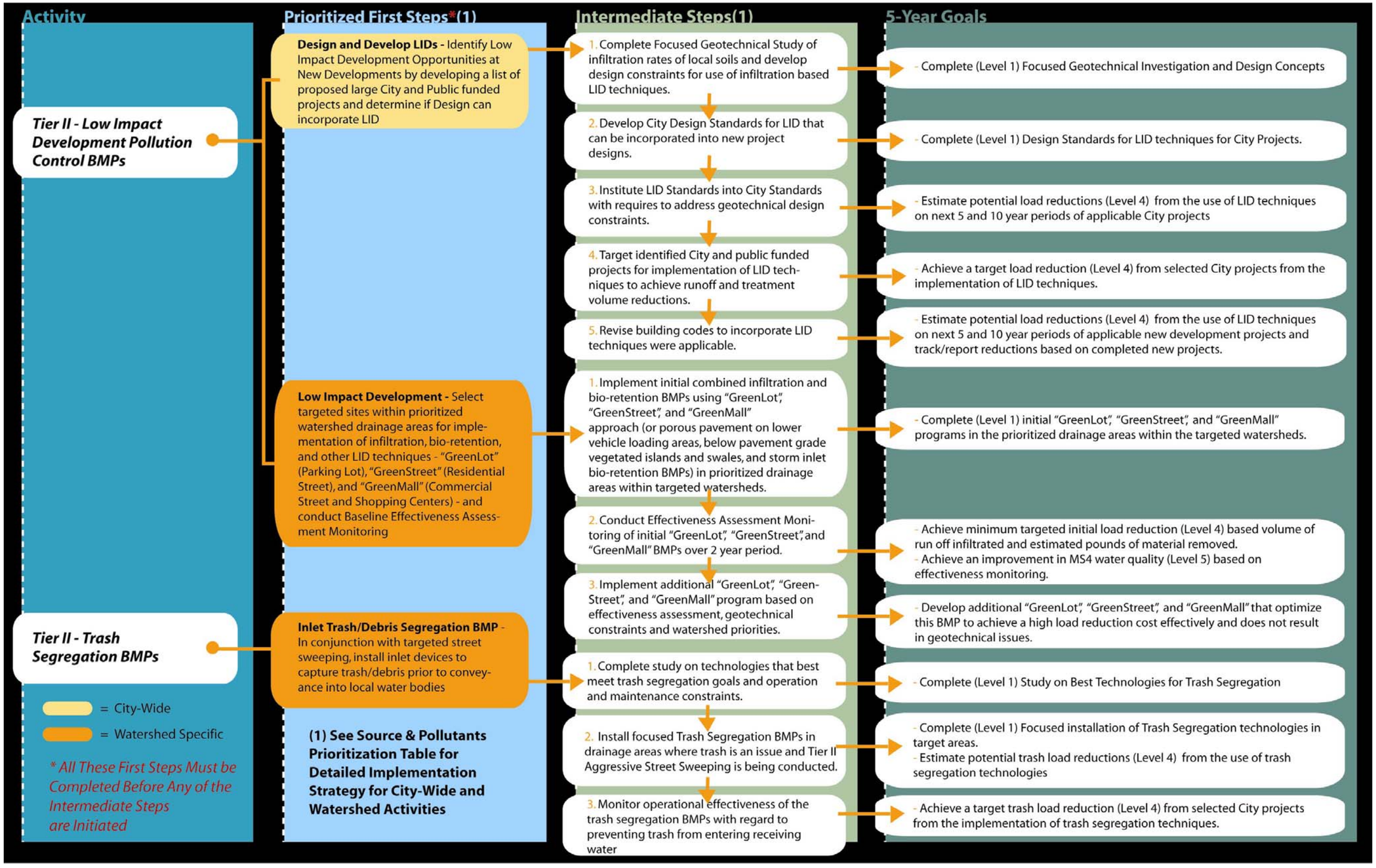

Table 3-6. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier II Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier II –Source Studies, Design Storm and Other Special Studies	Coordinate with Regional WURMP groups on **Source Studies**	1. Conduct Source Study (Special Studies) of Targeted Source Group per the Watershed Source Priorities (See Watershed Source Priorities Table 3-2 and source data gaps as listed in the Step 3 Outcomes in Section 2) for Tier II and Tier III BMPs) to determine actual loading and re-prioritize sources accordingly. 2. Expand Source Study to include additional Targeted Sources per the watershed priorities (see Table 3-2) and in coordination with the Regional WURMP groups. Use source study results on specific pollutant loading from one watershed for the same sources in other watersheds.	Prioritize by watersheds with existing or near future TMDLs (See Table 3-3)	Complete (Level 1) Source Study of Targeted Group and report findings to Regional WURMP Group. Determine actual loadings (Level 4) and estimate potential load reductions from Tier I BMPs to assess need for additional management actions. Complete (Level 1) additional Source Study of Targeted Group and report findings to Regional WURMP Group. Determine actual loadings (Level 4) and estimate potential load reductions from Tier I BMPs to assess need for additional management actions.
	Collect and analyzed storm water samples and measure flows to develop **pollutograph** for target watersheds.	1. Evaluate pollutograph data and historic rainfall data to develop design storm for Tier III BMP design. 2. Meet with the RWQCB to reach consensus on design storm approach. 3. Conduct follow-up monitoring and analysis to finalized design storm approach and determine load reductions to be achieved under this approach.		Complete (Level 1) design storm determination. Complete (Level 1) determination of estimated load reductions to be achieved under the design storm approach.

Table 3-6. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier II Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier II – Targeted Aggressive Street Sweeping	**Aggressive street sweeping** - Determine targeted watershed and prioritized drainage areas for *Initial watershed activities* **aggressive street sweeping** and conduct baseline monitoring for effectiveness assessment	1. Implement *Initial watershed activities* Targeted Aggressive Street Sweeping in selected watersheds and prioritized drainage areas as shown on Watershed Tier II BMP Figures. Initial aggressive street sweeping program will include the use of vacuum trucks and increased frequency. The effectiveness of this technology and different frequencies will be assessed to evaluate the Initial Watershed Activities program. 2. Conduct Effectiveness Monitoring of the *Initial Watershed Activities* Aggressive Street Sweeping for a period of 2 years to assess load reduction achieved. 3. Based on findings of *Initial Watershed Activities* program, implement aggressive street sweeping programs per the Watershed Priority Sectors.	Prioritize by watersheds with PWQP that include metals and sediment and include streets as a high priority source (see Table 3-2). The route locations are prioritized by priority sectors shown in watershed priority maps in Section 2.0.	Complete (Level 1) *Initial Watershed Activities* Aggressive Street Sweeping programs in the prioritized drainage areas within the targeted watersheds. Develop a Initial Watershed Activities Sweeping Program that optimizing the sweeping to achieve a high load reduction cost effectively. Achieve minimum targeted *Initial Watershed Activities* load reduction (Level 4) based pounds of material removed and constituent concentrations detected in debris samples. Achieve an improvement in MS4 water quality (Level 5) based on Initial Watershed Activities effectiveness monitoring.
Tier II – Targeted Source Control BMPs	**Trash/Debris Cleanup** - Sponsor local organizations cleanup efforts to remove litter from public areas and waterways **Homeless Encampment Removal**	Monitor operational effectiveness of the trash cleanup and eradicating illegal human settlement in waterways with regard to preventing trash/bacteria from entering receiving water	Prioritize by watersheds with PWQP that include trash and bacteria.	Estimate potential trash load reductions (Level 4) as a result of these programs
Tier II - Runoff Reduction	**Incentive Program** - Identify Runoff Reduction Opportunities and Develop Outreach Tools for Targeted Sources **Implement Smart irrigation Control Incentive, Downspout Redirection Incentive, Rain Barrel incentive and Roof Rain Water Harvesting and Reuse incentive Programs**	1. Complete outreach in different residential, commercial areas 2. Complete surveys to assess the effectiveness of these programs in different areas and further the program into future years based on the effectiveness.	Implementable in all watersheds and prioritized by priority sectors shown in watershed priority maps in Section 2.0.	Achieve minimum targeted *Initial Watershed Activities* load reduction (Level 4) Achieve an improvement in MS4 water quality (Level 5) based on Initial Watershed Activities effectiveness monitoring.

Table 3-6. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier II Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier II – Low impact Development Pollution Control BMPs	**Design and develop LIDs** - Identify Low Impact Development Opportunities at New Developments by developing a list of proposed large City and Public funded projects and determine if Design can incorporate LID.	1. Complete Focused Geotechnical Study of infiltration rates of local soils and develop design constraints for use of infiltration based LID techniques. 2. Develop City Design Standards for LID that can be incorporated into new project designs. 3. Institute LID Standards into City Standards with requires to address geotechnical design constraints. 4. Target identified City and public funded projects for implementation of LID techniques to achieve runoff and treatment volume reductions. 5. Revise building codes to incorporate LID techniques were applicable	Implementable in all watersheds where site geotechnical conditions allow for cost effective implementation of infiltration-type LID projects. Location of LID will depend on location of new, re-development, and maintenance projects. This is a City-Wide program to reduce run-off volumes to the MS4	Complete (Level 1) Focused Geotechnical Investigation and Design Constraints Complete (Level 1) Design Standards for LID techniques for City projects. Estimate potential load reductions (Level 4) from the use of LID techniques on next 5 and 10 year periods of applicable City projects Achieve a target load reduction (Level 4) from selected City projects from the implementation of LID techniques. Estimate potential load reductions (Level 4) from the use of LID techniques on next 5 and 10 year periods of applicable new development projects
	Low impact Development - Select targeted sites within prioritized watershed drainage areas for implementation of infiltration and bio-retention techniques – “Green Streets” (Residential Streets), “Green Lot” (Parking Lot) and “Green Mall” (Commercial Street or Shopping Centers) – and conduct Baseline Effectiveness Assessment Monitoring	1. Implement *Initial Watershed Activities* combined infiltration and bio-retention BMPs using “Green Streets”, “Green Lot” and “Green Mall” approach (porous pavement on lower vehicle loading areas, below pavement grade vegetated islands and swales, and storm inlet bio-retention BMPs) in prioritized drainage areas within targeted watersheds. 2. Conduct Effectiveness Assessment Monitoring of Initial Watershed Activities “Green Streets” BMPs over 2 year period. 3. Implement Initial Watershed Activities of Green Streets program based on effectiveness assessment, geotechnical constraints and watershed priorities.	Prioritized to sites within priority sectors (see watershed priority maps) where geotechnical site conditions allow for cost effective implementation.	Complete (Level 1) *Initial Watershed Activities* LID programs in the prioritized drainage areas within the targeted watersheds. Develop a LID Program that optimizes this BMP to achieve a high load reduction cost effectively and does not result in geotechnical issues. Achieve minimum targeted load reduction (Level 4) based volume of run off infiltrated and estimated pounds of material removed. Achieve an improvement in MS4 water quality (Level 5) based on LID effectiveness monitoring.

Table 3-6. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier II Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier II - Trash segregation BMPs	**Trash segregation BMPs** - Identify technologies that provide for effective segregation of trash prior to entering the MS4 and locations that can be coordinated with Tier II Aggressive Street Sweeping activities.	1. Complete study on technologies that best meet trash segregation goals and operation and maintenance constraints. 2. Install focused Initial Watershed Activities Trash Segregation BMPs in drainage areas where trash is an issue and Tier II Aggressive Street Sweeping is being conducted. 3. Monitor operational effectiveness of the trash segregation BMPs with regard to preventing trash from entering receiving water and not resulting in flooding or health hazards.	Prioritize by watersheds where aggressive street sweeping is targeting metals and sediment, and where the PWQP also include trash and bacteria. This BMP is to be implemented in conjunction with aggressive street sweeping and focus on easily maintained catchment basin inlet devices targeted to reduce the volume of trash entering the MS4. The BMP may reduce bacteria loading if properly maintained but is not to be used as a single-pollutant BMP for bacteria. The location is dependent on where the aggressive street sweeping routes are selected.	Complete (Level 1) Study on Best Technologies for Trash Segregation Complete (Level 1) Focused Initial Watershed Activities installation of Trash Segregation technologies in target areas. Estimate potential trash load reductions (Level 4) from the use of trash segregation technologies Achieve a target trash load reduction (Level 4) from selected City projects from the implementation of trash segregation techniques.

** All These First Steps Must be Completed Before Any of the Intermediate Steps are Initiated
Prioritized First Steps in RED are City-Wide Activities

Table 3-7. Priority Watershed Activities – Implementation Strategy: Tier III Best Management Practices

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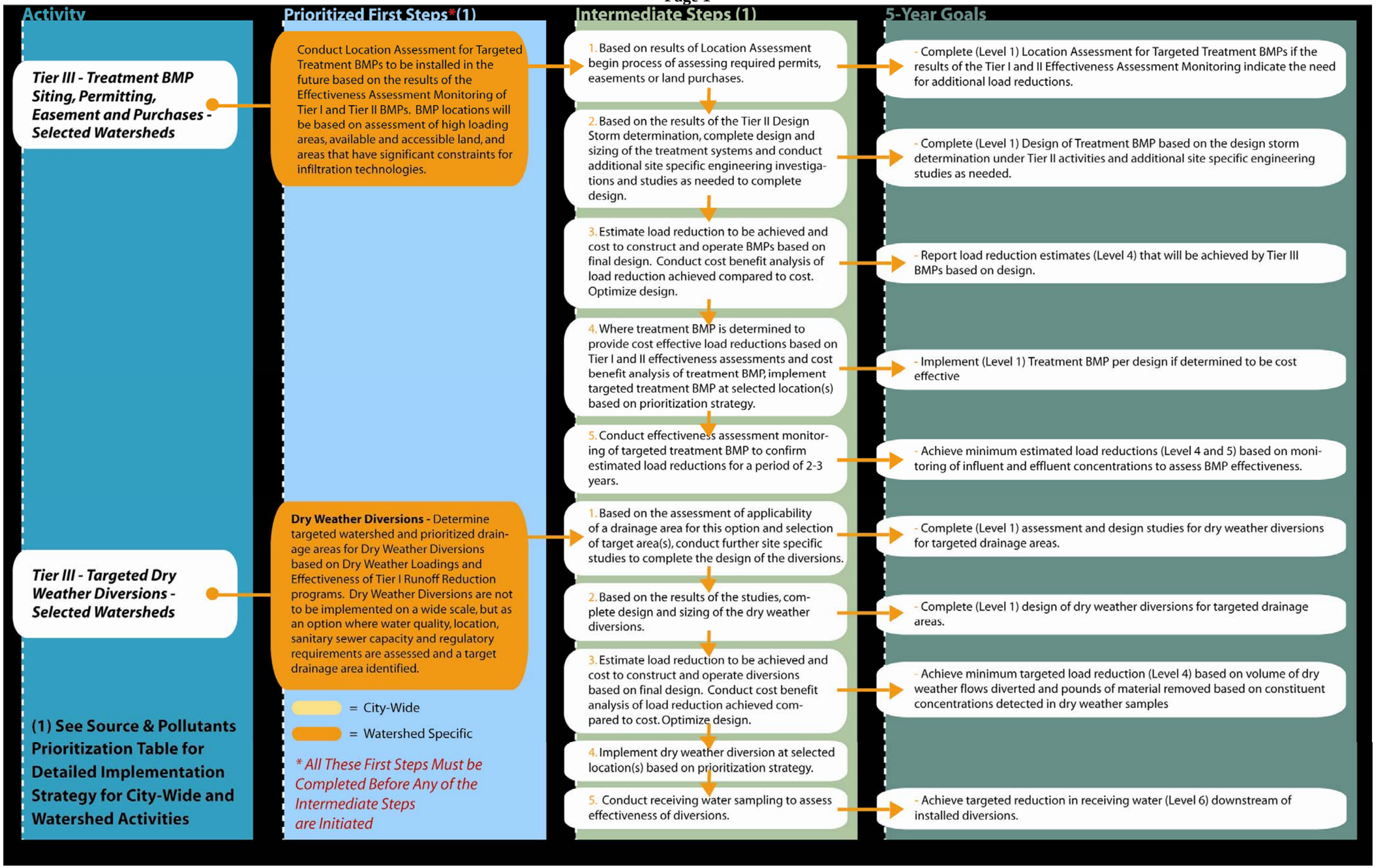

Table 3-7. Page 2 (Continued).

Table 3-8. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier III Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier III Treatment BMP Siting, Permitting, Easement and Purchases – Selected Watersheds	Conduct Location Assessment for Treatment BMPs to be installed in the future based on the results of the Effectiveness Assessment Monitoring of Tier I and Tier II BMPs. BMP locations will be based on assessment of high loading areas, available and accessible land, and areas that have significant constraints for infiltration technologies.	1. Based on results of Location Assessment begin process of assessing required permits, easements or land purchases. 2. Based on the results of the Tier II Design Storm determination, complete design and sizing of the treatment systems and conduct additional site specific engineering investigations and studies as needed to complete design. 3. Estimate load reduction to be achieved and cost to construct and operate BMPs based on final design. Conduct cost benefit analysis of load reduction achieved compared to cost. Optimize design. 4. Where treatment BMP is determined to provide cost effective load reductions based on Tier I and II effectiveness assessments and cost benefit analysis of treatment BMP, implement treatment BMP at selected location(s) based on prioritization strategy. 5. Conduct effectiveness assessment monitoring of Initial Watershed Activities treatment BMP to confirm estimated load reductions for a period of 2-3 years.	Prioritize by watersheds with existing or near future TMDLs. The first phase of pilot Tier III treatment BMPs will be prioritized to the Chollas, Tecolote and La Jolla Shores Watersheds; and City-Owned located on property within a high priority sector. The results of the Phase I effectiveness assessment of these Treatment BMP will determine the appropriate next phase of implementation in drainage areas which Tier I and II BMPs have not been effective in attaining the TMDL pollutant reduction goals based on Phase I effectiveness monitoring results.	Complete (Level 1) Location Assessment for Initial Watershed Activities Treatment BMPs if the results of the Tier I and II Effectiveness Assessment Monitoring indicate the need for additional load reductions. Complete (Level 1) Design of Treatment BMP based on the design storm determination under Tier II activities and additional site specific engineering studies as needed. Estimate load reductions (Level 4) that will be achieved by Tier III BMP based on design. Implement (Level 1) Treatment BMP per design if determined to be cost effective Monitor influent and effluent concentrations to assess effectiveness of the BMP and verify estimated load reductions (Level 4 and 5).

Table 3-8. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier III Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier III – Targeted Dry Weather Diversions – Selected Watersheds	**Low Flow Diversions** - Determine targeted watershed and prioritized drainage areas for Dry Weather Diversions based on Dry Weather Loadings and Effectiveness of Tier I Runoff Reduction programs. Dry Weather Diversions are not to be implemented on a wide scale, but as an option where water quality, location, sanitary sewer capacity and regulatory requirements are assessed and a target drainage area identified.	1. Based on the assessment of applicability of a drainage area for this option and selection of target area(s), conduct further site specific studies to complete the design of the diversions. 2. Based on the results of the studies, complete design and sizing of the dry weather diversions. 3. Estimate load reduction to be achieved and cost to construct and operate diversions based on final design. Conduct cost benefit analysis of load reduction achieved compared to cost. Optimize design. 4. Implement dry weather diversion at selected location(s) based on prioritization strategy. 5. Conduct receiving water sampling to assess effectiveness of diversions	Prioritize by watersheds and then by priority sectors shown in watershed priority maps in Section 2.0. Further prioritize by Bacteria COCs (See Table 3-2)	Complete (Level 1) assessment and design studies for dry weather diversions for targeted drainage areas. Complete (Level 1) design of dry weather diversions for targeted drainage areas. Achieve minimum targeted load reduction (Level 4) based on volume of dry weather flows diverted and pounds of material removed based on constituent concentrations detected in dry weather samples. Achieve targeted reduction in receiving water (Level 6) downstream of installed diversions.
Tier III – Bacteria Treatment BMPs – Selected Watersheds	**Bacteria Treatment** - Identify technologies that provide for effective reduction of bacteria prior to achieving target reduction at the MS4 outfalls.	1. Complete study on technologies that best meet bacteria reduction goals and operation and maintenance constraints. 2. Install focused Initial Watershed Activities Bacteria Treatment BMPs in drainage areas where trash is an issue and Tier II Aggressive Street Sweeping is being conducted. 2. Monitor operational effectiveness of the Bacteria Treatment BMPs with regard to preventing bacteria from entering receiving water and not resulting health hazards.	Prioritize by watersheds and then by priority sectors shown in watershed priority maps in Section 2.0. Further prioritize by Bacteria and trash COCs (See Table 3-2)	Complete (Level 1) Study on Best Technologies for Bacteria reduction Complete (Level 1) Focused Initial Watershed Activities installation of Bacteria reduction technologies in target areas. Estimate potential Bacteria load reductions (Level 4) from the use of Bacteria Treatment Technologies Achieve a target bacteria load reduction (Level 4) from selected City projects from the implementation of bacteria treatment techniques.

Table 3-8. Priority Watershed Activities – 5-Year Implementation Strategy and Prioritization – Tier III Best Management Practices

ACTIVITY	PRIORITIZED FIRST STEPS**	INTERMEDIATE STEPS	Prioritization	5-YEAR GOALS
Tier III - Erosion and Sediment Controls and Mitigation of Peak Flow Impacts (Hydro-modification) in Targeted Drainage Areas– Selected Watersheds	**Erosion and Sediment control BMPs -** Determine targeted watershed and prioritized drainage areas for **Erosion and Sediment controls** based on comparison of estimated undeveloped sediment loadings versus current load reduction requirements and requirements for reduction in **hydro-modification** of downstream channels. (ex: Hydrodynamic separators , Detention Basin etc…)	1. Based on the assessment of applicability of a drainage area for this option and selection of target area(s), conduct further site specific studies to complete the design of these BMPs. 2. Based on the results of the studies, complete design and sizing of BMPs. 3. Estimate load reduction and/or peak flow mitigation to be achieved and cost to construct and operate BMPs based on final design. Conduct cost benefit analysis of load reduction achieved compared to cost. Optimize design. 4. Implement BMP at selected location(s) based on prioritization strategy. 5. Conduct receiving water sampling and channel erosion to assess effectiveness of BMP	Prioritize by watersheds and then by priority sectors shown in watershed priority maps in Section 2.0. Further prioritize by Sediment and trash COCs (See Table 3-2 and Table 3-3)	Complete (Level 1) assessment and design studies for BMPs for targeted drainage areas. Complete (Level 1) design of BMPs for targeted drainage areas. Achieve minimum targeted load reduction (Level 4) based on areas stabilized and/or peak flow impact reduced. Achieve targeted reduction in receiving water (Level 6) downstream of installed BMPs and/or targeted reductions in stream channel modification.

** All These First Steps Must be Completed Before Any of the Intermediate Steps are Initiated
Prioritized First Steps in RED are City-Wide Activities