

INDIAN HILLS GENERAL IMPROVEMENT DISTRICT

**MUNICIPAL SEPARATE STORM SEWER SYSTEM
STORM WATER MANAGEMENT PLAN**

ANNUAL UPDATE 2006

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**Indian Hills General Improvement District
Municipal Separate Storm Sewer System
Storm Water Management Plan**

BACKGROUND

The quality of the nation's waters are protected by the Clean Water Act (CWA). Phase I of the U.S. Environmental Protection Agency's (EPA) storm water program provided permit coverage to medium and large municipal separated storm sewer systems (MS4s) generally serving population of 100,000 or greater, construction activity disturbing 5 acres of land or greater, and ten additional categories of industrial activity. Phase II of the EPA storm water program expands the Phase I program by requiring additional operators of MS4s in urbanized areas and operators of small construction sites, to implement programs and practices to control polluted storm water runoff.

The Indian Hills General Improvement District, along with other portions of Carson, Lyon and Douglas Counties, together comprise an urbanized area that is required to obtain a Phase II NPDES Storm Water permit. The approximate geographic center of the MS4 is located at latitude 39°08' and longitude 120°45'.

The NDEP has issued a general permit for Phase II designated small MS4s. To obtain permit coverage the Indian Hills General Improvement District MS4 group must submit a Notice of Intent (NOI) for coverage under the Phase II general permit by March 10, 2003. The NOI must be accompanied by a storm water management plan summary that discusses the BMPs that will be used to achieve compliance with the Phase II requirements, a timeline for implementation of the BMPs, and measurable goals to assure the program is meeting its objectives. The Phase II storm water management program must be fully implemented by the end of the first permit term, typically a 5-year period.

The Carson River and its tributaries in the urban area are the water bodies of concern for the MS4. The reaches of the Carson River that lie contiguous to or within the Indian Hills General Improvement District portion of the urban area have been included in the State of Nevada 2002 303d list.

The water quality standards for the Carson River are included in Chapter 445A NAC. Per NAC 445A.145, water quality criteria specified for a control point (a particular location in a waterbody) apply to all surface waters of Nevada in the watershed upstream from the control point or to the next upstream control point or to the next water named in NAC 445A.123. Water quality standards are given for several control points along the Carson River.

Phase II is a narrative rule that requires the implementation of Best Management Practices (BMPs) to assure that storm water discharges will not cause or contribute to instream exceedences of water quality standards. Indian Hills General Improvement District is required to develop, implement and enforce a storm water management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act.

The NDEP requirements for a small MS4 General Permit include the six minimum control measures included in the EPA Phase II NPDES program and special conditions for discharges to water quality impaired water. The six measures, as described by EPA, are discussed below.

Public Education and Outreach. An informed and knowledgeable community is crucial to the success of a storm water management program since it helps to ensure greater support for the program and greater compliance. To satisfy this minimum control measure, the permittee needs to:

- ❑ Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local waterbodies and the steps that can be taken to reduce storm water pollution; and
- ❑ Determine the appropriate BMPs and measurable goals for this minimum control measure.

Public Participation and Involvement. An active and involved community is crucial to the success of a storm water management program because it fosters broader public support, shorter implementation schedules due to fewer public and legal challenges, and may provide an avenue for cross-connections with other programs. To satisfy this minimum control measure, the permittee needs to:

- ❑ Comply with applicable State and local public notice requirements; and
- ❑ Determine the appropriate BMPs and measurable goals for this minimum control measure.

Illicit Discharge Detection and Elimination. Discharges from MS4s often include wastes and wastewater from non-storm water sources. Illicit discharges enter the system through either direct connections, such as wastewater piping either mistakenly or deliberately connected to the storm drains, or indirect connection, such as infiltration from cracked sanitary sewers, spills collected by drain outlets, or materials dumped into storm drains. To satisfy this minimum control measure, the permittee must develop, implement and enforce an illicit discharge detection and elimination program. This program must include the following:

- ❑ A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- ❑ An ordinance, or other regulatory mechanism, to prohibit (to the extent allowable under State, Tribal, or local law) non-storm water discharges in the MS4, and appropriate enforcement procedures and actions;
- ❑ A plan to detect and address non-storm water discharges, including illegal dumping, into the MS4;
- ❑ The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste; and

The determination of appropriate BMPs and measurable goals for this minimum control measure.

Construction Site Runoff Control. Polluted storm water runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. The Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement, and enforce a program to reduce pollutants in storm water runoff to their MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee is required to:

- ❑ Have an ordinance or other regulatory mechanism requiring the implementation of proper erosion and sediment control, and control for other wastes, on applicable construction sites;
- ❑ Have procedures for site plan review of construction plans that consider potential water quality impacts;
- ❑ Have procedures for site inspection and enforcement of control measures;
- ❑ Have sanctions to ensure compliance (established in the ordinance or other regulatory mechanism);
- ❑ Establish procedures for the receipt and consideration of information submitted by the public; and
- ❑ Determine the BMPs and measurable goals for this minimum control measure.

Post-Construction Runoff Control. Storm water runoff generated post development impacts receiving waters in the following ways.

- The water quality of the receiving water may be affected due to pollutants carried in storm water.
- The peak rate of runoff from impervious surfaces can cause erosion of downstream conveyance facilities. Sediments generated from erosion are transported to the receiving waters.
- The increased volume of runoff generated by impervious surfaces may cause downstream flooding.

The Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement, and enforce a program to reduce pollutants in post-construction runoff to their MS4 from new development and redevelopment projects that result in the land disturbance of greater than or equal to 1 acre. The small MS4 operator is required to:

- ❑ Develop and implement strategies which include a combination of structural and/or non-structural BMPs;
- ❑ Have an ordinance or other regulatory mechanism requiring the implementation of post construction runoff controls to the extent allowable under State, Tribal or local law;

- Ensure adequate long-term operation and maintenance of controls;
- Determine the appropriate BMPs and measurable goals for this minimum control measure.

Pollution Prevention/Good Housekeeping. This measure requires the MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharge into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

The Phase II rule requires the operator of an MS4 to:

- Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations into the storm sewer systems;
- Include employee training on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as park land open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance ;
- Determine the appropriate BMPs and measurable goals for this minimum control measure.

In addition to the six minimum requirements the Indian Hills General Improvement District MS4 must comply with permit Section 3.1 Discharges to Water Quality Impaired Waters. The information provided in the following section follows the outline provided in Sections 3.1, 3.2 and 4.2 of the Small MS4 General Permit developed by NDEP.

3.1 Discharges to Water Quality Impaired Waters

3.1.1 Permit requirement. Determine whether storm water discharge from any part of the MS4 significantly contributes directly or indirectly to a 303(d) listed waterbody.

Storm water runoff from the Indian Hills General Improvement District MS4 discharges ultimately to the Carson River. The Carson River is listed on the State of Nevada 2002 303(d) list. The pollutants listed on the 303(d) list for these reaches include iron (total), temperature, total phosphorus, total suspended solids, turbidity, and mercury (only listed for the reach from New Empire to Dayton Bridge).

3.1.2 If the permittee has 303(d) discharges described above, the permittee must also determine whether a TMDL has been developed and approved by the Division for the listed waterbody. If there is a TMDL, the permittee must comply with both Parts 3.1.2 and 3.1.3. If no TMDL has been approved, Part 3.1.3 does not apply until a TMDL has been approved.

A TMDL for the Carson River was developed in the early 1980's (Water Quality Management (208) Plan for the Carson River Basin, Nevada, (1982)). The 208 Plan identified the problems causing water quality impairment of the Carson River and its tributaries. The problems identified included:

- Periods of highly turbid condition due to natural and man-included land disturbing activities.
- Discharge of low quality sewage effluent into the river.
- Groundwater contamination from septic tanks and leach field systems (including landfill leachate)

A TMDL was developed based on information contained in the 208 Plan. The TMDL contained maximum allowable daily loads for dissolved oxygen, biochemical oxygen demand, orthophosphates, nitrates and total dissolved solids. The pollutants listed on the 2002 303(d) list include: iron (total), temperature, total phosphorus, total suspended solids, turbidity and mercury.

This Storm Water Management Plan will include programs and BMPs designed to minimize discharge of pollutants on the 2002 303(d) list for the Carson River.

3.1.3 Water Quality Controls for Discharges to Impaired Waterbodies. The permittee's SWMP must include a section describing how the permittees program will control the discharge of the pollutants of concern and ensure the permittees discharges will not cause or contribute to instream exceedances of the water quality standards. This discussion must specifically identify measures and BMPs that will collectively control the discharge of the pollutants of concern.

The Storm Water Management Plan (SWMP) described in Section 4 will describe in detail the BMPs that will be implemented to control the discharge of the 2002 303(d) list pollutants. The pollutants of interest, with the exception of iron and mercury, may be contributed by storm water runoff. Iron and mercury are not typically found in high quantities in municipal storm water runoff, but are more typically from naturally occurring mineral deposits or from uncontrolled runoff from industrial or mining activities. The 208 Plan identified the source of excessive iron as naturally occurring geologic formations. The 208 Plan attributed the mercury in the Carson River downstream of the urbanized area to Comstock Milling activities. The identification of potential sources of iron and mercury within the MS4 will be included in the illicit connection detection program discussed in Section 4.

3.1.4 Determine whether the approved TMDL is for a pollutant likely to be found in storm water discharges from the permittees MS4.

The TMDL parameters, dissolved oxygen, biochemical oxygen demand, orthophosphates, nitrates and total dissolved solids were imposed in response to the condition of the river in the early 1980's. Since that time the wastewater treatment plants along the river have been improved and these pollutants are no longer on the 303(d) list. The parameters listed on the TMDL can be contributed by storm water runoff but are generally attributed to wastewater discharges.

3.1.5 Determine whether the TMDL includes a pollutant wasteload allocation (WLA) or other performance requirements specifically for storm water discharge from the permittees MS4.

The 208 Plan identified potential sources of non-point pollution including agriculture, silviculture, mining, urban storm water runoff, construction activities and residual waste disposal. The 208 Plan did not propose plans for the reduction of naturally occurring nonpoint sources of pollution. The 208 Plan identified that the contribution of suspended sediments was the primary pollution source due to urban storm water runoff and construction activities.

The 208 Plan recognized that urban storm water runoff and construction activities affect Carson River water quality, although not to a significant degree. "The principal reason for the insignificant affect of urban runoff is the infrequent occurrence of precipitation which normally occurs locally, and the low annual precipitation levels. These characteristics create a situation where the effect upon the river is usually local and lasts for no longer than a few days." (Water Quality Management (208) Plan for the Carson River Basin, Nevada, March 1982, page II-44). The 208 Plan identified sediments and metals, most noticeably lead deposited on roadways and from automobile exhaust, as the pollutants of concern from urban drainage.

Maximum allowable daily loads were calculated for dissolved oxygen, biochemical oxygen demand, orthophosphate, phosphorus, nitrate nitrogen, and total dissolved solids. Fecal coliform, pH, chlorides, total suspended solids, turbidity, color and temperature were not addressed in the allowable loads and load allocations process.

Wasteload allocations (WLA) designed to improve the water quality in the Carson River during the critical low flow periods were developed. Wasteload allocations were developed for point sources, principally domestic wastewater treatment plants. The only non-point source for which WLAs were developed was irrigation.

3.1.6 Determine whether the TMDL address a flow regime likely to occur during periods of storm water discharge.

The TMDL design flow was extreme low flow periods. Storm water discharge is not likely during these periods.

3.1.7 After the determinations above have been made and if it is found that the permittees MS4 must implement specific WLA provisions of the TMDL, assess whether the WLAs are being met through implementation of existing storm water control measures or if additional control measures or if additional control measures are necessary.

A WLA for storm water was not developed during the TMDL process.

3.1.8 Document all control measures currently being implemented or planned to be implemented. Also include a schedule of implementation for all planned controls. Document the calculations or other evidence that shows that the WLA will be met.

A WLA for storm water was not developed during the TMDL process.

3.1.9 *Describe a monitoring program to determine whether the storm water controls are adequate to meet the WLA.*

A WLA for storm water was not developed during the TMDL process.

4.2 Minimum Control Measures

4.2.1 Public Education and Outreach on Storm Water Impacts

4.2.1.1 *Permit requirement. The permittee must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.*

The Indian Hills General Improvement District MS4 will implement a public education program to distribute educational materials to the community via print and visual media and through community programs. The education and outreach program will inform the community about the impacts of storm water pollution on receiving water quality and identify BMPs the general population, business and industry can take to reduce storm water pollution.

4.2.1.2 *Decision process. The permittee must document the permittees' decision process for the development of a storm water public education and outreach program. The permittees' rationale statement must address both the overall public education program and the individual BMPs, measurable goals and responsible persons for the program. The rationale statement must include the following information, at a minimum:*

The Indian Hills General Improvement District will use a multi-faceted approach to providing public education and outreach on storm water impacts to receiving waters. The Indian Hills General Improvement District recognizes that much of the pollution that enters the receiving waters is generated through carelessness and ignorance. We recognize that materials that catch the eye or ear or present information in a fun manner or environment will motivate people to listen. The Indian Hills General Improvement District MS4 proposes to develop videos, commercials, and/or training films on storm water management. In addition, we will develop print material discussing such areas as erosion/sediment control, lawn and yard maintenance, and hazardous waste and trash disposal that can be distributed in various ways such as utility bills, information kiosks, and in news letters. The educational information may be different for the various target groups, i.e., homeowners, business, children.

4.2.1.2.1 *How the permittee plans to inform individuals and households about the available steps to reduce storm water pollution.*

The Indian Hills General Improvement District will develop brochures for the general public or specific audiences that could be included in utility bills, information packets, building permit information or information kiosks. Brochures could include information on lawn and garden activities, water conservation practices, proper disposal of pet wastes, trash/hazardous waste management and erosion and sediment control. The brochures will inform the target group about the potential for storm water pollution due to various activities and identify behaviors or BMPs that could be instituted to minimize storm water pollution.

The Indian Hills General Improvement District will develop a website for the posting of storm water related information, videos, etc.

The Indian Hills General Improvement District will work with groups who are currently involved in watershed management, river stewardship and environmental protection in the Indian Hills General Improvement District area to assure that the information contained in the public education materials is compatible with existing programs.

4.2.1.2.2 *How the permittee plans to inform individuals and groups on how to become involved in the storm water program.*

The Indian Hills General Improvement District plans on providing a booth, kiosk or materials at James Lee Park events where citizens could learn about pollution carried by storm water, or pick up educational materials.

Indian Hills General Improvement District will include information via printed material regarding on-going storm water pollution prevention programs. In addition, information will be made available to the general public regarding how to contact the storm water clearing house or web site. Information on upcoming opportunities for participation in clean-up programs, training programs or storm water pollution related projects will be available on the website.

4.2.1.2.3 *Who are the selected target audiences for the permittee's education program who are likely to have significant storm water impacts (including commercial, industrial and institutional entities) and why those target audiences were selected.*

In order to get a broad base of understanding and support during the early stages of the development of a storm water management plan the general public will be targeted for general information material regarding the potential for storm water borne pollution. A secondary target will be the construction industry. Development and redevelopment in Indian Hills General Improvement District will continue. Uncontrolled erosion and storm water pollution from construction sites has the potential to impact water quality.

The erosion and sediment control and post-construction storm water pollution control for the construction and business/industry sectors will be targeted in the District.

4.2.1.2.4 *What are the target pollutant sources that the permittee's public education program is designed to address.*

Total phosphorous loading has been identified as the most severe water quality impact to the receiving waters in the Indian Hills General Improvement District basin. Phosphorous loading generally results from soil erosion both during and after construction, excessive fertilizer use and vegetation decay. Additional target pollutant sources are total suspended solids, turbidity, and temperature.

In addition to the pollutant sources identified above, the illicit connection detection program required by this permit will look for sources of iron and mercury. These pollutants are listed on the 303(d) list for the reaches of the Carson River contiguous to the Indian Hills General Improvement District's portion of the Urbanized Area. Iron and mercury are not typical storm water borne pollutants from municipal run off but are more typical of naturally occurring mineral deposits or industrial or mining storm water runoff.

4.2.1.2.5 *What is the permittee's outreach strategy, including the mechanisms (e.g., printed brochures, newspapers, media, workshops, etc.) you will use to reach your target audiences, and how many people are expected to be reached by your outreach strategy over the permit time.*

The Indian Hills General Improvement District MS4 outreach strategy is to use a combination of printed and visual media, community gatherings and school programs to reach a broad range of groups, including homeowners, commercial operators, the development community, and children. The Indian Hills General Improvement District MS4 has a combined population of approximately 6,000. The goal of the outreach strategy is to reach at least 50% of the population on an annual basis with a goal of 100% over the life of the permit.

4.2.1.2.6 *Who is responsible for overall management and implementation of the permittee's storm water public education and outreach program and if different, who is responsible for each of the BMPs identified for this program.*

Indian Hills General Improvement District's Field Operations Division will be the division responsible for the overall management and implementation of the storm water education and outreach program, under the direct responsibility of the District's General Manager.

4.2.1.2.7 *How will the permittee evaluate the success of this minimum measure, including the selected measurable goals for each of the BMPs.*

The program will be considered successful if:

At least five Public Service videos are produced and aired to the general public.

- Web site section developed.

Timeline

- **2006** - Provide semi-annual brochures along with utility bills. Work with local community television to develop video/commercials.
- **2007** - Develop web site and storm water clearing house.
- **2008** - Assist in establishing a stream team stewardship program.
- **2009** - Prepare a booth/kiosk with displays to be used at civic events, school functions, etc.

4.2.2 Public Involvement/Participation

4.2.2.1 *Permit requirement. The permittee must at a minimum, comply with State and local public notice requirements when implementing a public involvement/participation program.*

4.2.2.2 *Decision process. The permittee must document the decision process for the development of a storm water public involvement/participation program. The permittees' rationale statement must address both the overall public involvement/participation program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement must include the following information, at a minimum:*

4.2.2.2.1 *How the permittee has involved the public in the development and submittal of the storm water management plan.*

Indian Hills General Improvement District will meet with Douglas County, Carson County, and tribal government to determine how the areas within the MS4, but under the jurisdiction of these other entities, will implement the MS4.

4.2.2.2.2 *What is the permittee's plan to actively involve the public in the development and implementation of your program.*

The Indian Hills General Improvement District MS4 will use a variety of means to involve the public in the development and implementation of the SWMP. The Indian Hills General Improvement District MS4 will hold a public meeting to present the NOI submittal and the SWMP during the development stages. Citizen involvement will also be solicited to work as volunteers to educate other individuals about the program,

4.2.2.2.3 *Who is the target audiences for the permittee's public involvement program, including a description of the types of ethnic and economic groups engaged. The permittee are encouraged to actively involve all potentially affected stakeholder groups, including commercial and industrial businesses, trade associations, environmental groups, homeowners associates, and educational organizations, among others*

The target audience for the public involvement group includes a cross-section of the stakeholder interests in the greater Indian Hills General Improvement District area. Stakeholder groups who will be targeted include: the construction industry, businesses – particularly those with a significant amount of landscaped area or storm water pollution potential - industries, homeowners, and environmental groups.

4.2.2.2.4 *What are the types of public involvement activities included in the permittee's program. Where appropriate consider the following types of public involvement activities :*

- Public hearings
- Working with citizen volunteers willing to educate others about the program

The Indian Hills General Improvement District MS4 will assure that all meetings are well advertised, will follow the applicable open meeting requirements for the District, and will make a concerted effort to solicit input from various sectors. Advertisement methods may include print media, radio, etc.

The Indian Hills General Improvement District MS4 will develop a website and a storm water clearinghouse where citizens can find out information on volunteer and educational opportunities.

4.2.2.2.5 *Who is responsible for the overall management and implementation of the permittee's storm water public involvement/participation program and, if different, who is responsible for each of the BMPs identified for this program.*

Indian Hills General Improvement District's Field Operations Division will be responsible for the overall management and implementation of the public involvement / participation program, under the direction of the General Manager.

4.2.2.2.6 *How will the permittee evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs.*

This measure will be considered successful if:

- Meeting advertisement protocol is developed and implemented.
- The storm water website and clearinghouse is implemented.

Timeline

- **2006** - Develop/Implement meeting advertisement protocol.
- **2007** - Records of Meetings are kept and filed.
- **2008** - Pilot stream stewardship program in place.

4.2.3 Illicit Discharge Detection and Elimination

An illicit discharge is defined as any discharge to an MS4 that is not composed entirely of storm water or otherwise permitted discharges. The exceptions to this definition include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities.

Illicit discharges can enter an MS4 through direct connection (incorrectly connected sanitary sewer) or through indirect connection (including but not limited to spills into catch basins, cracked sanitary sewers).

4.2.3.1 Permit requirement. The permittee must:

4.2.3.1.1 *Develop, if not already completed, a storm sewer system map showing the location of all outfalls and the names and location of all waters of the United States that receive discharge from those outfalls.*

The Indian Hills General Improvement District MS4, through its Storm Water Utility and Storm Water Master Plan, will develop a comprehensive storm water map. Indian Hills General Improvement District is currently developing a Storm Water Master Plan to identify existing deficiencies and to identify future capital improvements to its storm drain infrastructure. Through the Master Plan process a storm sewer map will be prepared that will identify the location of storm sewer outfalls, names and locations of receiving waters, and water shed basins for each outfall.

4.2.3.1.3 *To the extent allowable under State, or local law, effectively prohibit, through ordinance or other regulatory mechanism, non-storm water discharges into the permittee's storm sewer system and implement appropriate enforcement procedures and actions.*

The Indian Hills General Improvement District MS4 will develop an ordinance to prohibit non-storm water discharges into the storm sewer system. The ordinance will include enforcement procedures and actions.

4.2.3.1.4 *Develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to the permittee's system.*

The Indian Hills General Improvement District MS4 will develop a plan to detect and eliminate non-storm water discharges, including illegal dumping, to the storm water system. The plan will include procedures for locating and prioritizing areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge and procedures for program evaluation and assessment.

Priority areas likely to have illicit discharges will be identified through a review of the land use and business/industry located in specific drainage subbasins. Subbasins with high potential for storm water pollution, i.e., golf course with high amount of fertilizer use, will be identified on the storm water base map. In addition, the Indian Hills General Improvement District MS4 will obtain a listing of the businesses holding individual NPDES permits and locate them on the storm water base map.

Another potential source of illicit connections are sanitary sewer overflows during high flow events or direct connections of sanitary sewers into the storm sewer. The Indian Hills General Improvement District MS4 will develop a procedure to assure that information is transferred between departments so that if a cross connection or sanitary sewer facility problem is identified the drainage utility staff is made aware of the problem.

Field investigation for illicit discharges will be conducted on a scheduled and as-needed basis. Field notes and photographs taken during the inspection will be maintained for reference. In addition, a visual inspection of each outfall will be conducted bimonthly & samples will be collected and tested. Routine testing parameters will include pH, oil & grease, temperature and visual observation for oil sheen. Dry weather observations are particularly important in detecting non-storm water discharges.

4.2.3.1.5 *Inform public employees, business and general public about the hazards associated with illegal discharges and improper disposal of waste.*

Information regarding illegal discharges and the proper methods for waste disposal will be developed in the materials discussed under the Public Education section. The public education materials will include information on the types of discharges and connections that are not allowed to the storm sewer and recommended alternatives for remedying illicit connections and illegal dumping.

Indian Hills General Improvement District currently is considering establishing a “trash containment area” policy for food service businesses to capture run-off and wash water from their trash containment areas. This policy helps to eliminate storm water pollution generated by solid waste disposal.

4.2.3.1.6 *Address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if the permittee identifies them as significant contributors of pollutants to the permittees small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CRF 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants).*

During the preparation of the storm water base map and identifying basins with potential sources of illicit connections Indian Hills General Improvement District will evaluate the potential for the non-storm water discharges listed above to contribute to storm water pollution.

If Indian Hills General Improvement District determines that any of the non-storm water discharges has the potential to contribute pollutants to storm drainages regulations prohibiting the discharge will be developed.

4.2.3.1.7 *The permittee may also develop a list of other similar occasional incidental non-storm water discharges (e.g. non-commercial or charity car washes, etc.) that*

will not be addressed as illicit discharges. These non-storm water discharges must not be reasonably expected to be significant sources of pollutants to the MS4, because of either the nature of the discharges or conditions the permittee have established for allowing these discharges to the permittees MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive waterbodies, BMPs on the wash water, etc.) The permittee must document in the SWMP any local controls or conditions placed on the discharges. The permittee must include a provision prohibiting any individual non-storm water discharge that is determined to be contributing significant amounts of pollutants to the MS4.

The Indian Hills General Improvement District MS4 will determine whether it is necessary to place controls or conditions on occasional discharges of non-storm water sources that are not expected to be a significant source of pollution. If occasional non-storm water pollution is found to merit control or conditions, the Indian Hills General Improvement District MS4 will develop such requirements.

4.2.3.2 *Decision process. The permittee must document the decision process for the development of a storm water illicit discharge detection and elimination program. The permittees rationale statement must address both the overall illicit discharge detection and elimination program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement must include the following information, at a minimum:*

4.2.3.2.1 *How the permittee will develop a storm sewer map showing the location of all outfalls and the names and location of all receiving waters. Describe the sources of information the permittee used for the maps, and how the permittee plans to verify the outfall locations with field surveys. If already completed, describe how the map was developed. Also, describe how the map will be regularly updated.*

Information utilized for the storm sewer map will include two foot contour interval aerial topographic mapping. This will be supplemented with existing storm sewer locations as identified in the District's GIS database and through field surveys conducted as part of the Storm Water Master Plan.

The storm sewer map and database will be kept in the District's GIS and will be updated through "record drawings" of permitted and constructed public and private facilities. A method will be developed for Utilities and Street personal to provide updated information to the GIS department when discrepancies are noted in the field. It is expected that District personnel will be able to detect discrepancies during normal and routine maintenance of the various utility systems.

4.2.3.2.2 *The mechanism (ordinance or other regulatory mechanism) the permittee will use to effectively prohibit illicit discharges into the MS4 and why the mechanism was chosen. If the permittee needs to develop this mechanism,*

describe the plan and the schedule to do so. If the permittees ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the program.

The Indian Hills General Improvement District MS4 will develop a stand-alone ordinance that prohibits illicit discharge, identifies the corrective actions required and provides enforcement mechanisms.

Often times illicit discharges are located on private property. An ordinance that ensures “right of entry” is the preferred regulatory mechanism so that source of illicit connections on private property can be located.

It is anticipated that Indian Hills General Improvement District staff will develop an illicit connection ordinance during **2006**. The goal would be to adopt the ordinance in **2007**.

4.2.3.2.3 *The permittee’s plan to ensure through appropriate enforcement procedures and actions that the illicit discharge ordinance (or other regulatory mechanism) is implemented.*

The illicit connection ordinance will contain specific available enforcement procedures and penalties for non-compliance. A key to an effective ordinance will be a “right of entry” provision and a well-trained staff, knowledgeable in the detection and identification of illicit discharges.

4.2.3.2.4 *Describe your plan to detect and address illicit discharges to your system, including discharges from illegal dumping and spills.*

The illicit detection discharge program will include problem area delineation, field investigation, complaint/tip follow-up and education on methods to remove the illicit discharge. This program will include periodic visual inspections of major outfalls and procedures for tracing illicit connections.

The sub-basins for each of the major outfalls will be identified during the preparation of the storm water map. Commercial sites, particularly those with the potential for non-storm water discharges in each basin will be identified on the maps and in a list.

Areas with a higher likelihood of cross connections with the storm sewer will be identified. These areas may include areas of sanitary sewer where infiltration/inflow could be expected, areas where the sanitary sewer could potentially overflow during high flow periods, or other areas with the potential for cross connections.

Field investigation for illicit discharges will be conducted on a scheduled and as-needed basis. Dry weather visual inspection for the presence of non-storm water discharges will be conducted at the major outfalls. Field notes and photographs taken during the inspection will be maintained for reference. In addition, a visual observation of each outfall will be conducted bimonthly and samples will be collected and tested. Routine testing parameters will include pH, oil and grease,

temperature, and a visual observation for oil sheen. Periodically, the storm water outfalls will be visually inspected during wet-weather storm events.

If non-storm water discharges are identified at an outfall the source of the discharge will be investigated through several means including identifying potential sources within the basin, chemical analysis of the non-storm water discharge to identify potential source, review of citizen complaints or dumping, odors, unusual activity, and review of sanitary sewer maps to identify possible cross connections. The list of potential non-storm water discharge sites within the basin will be matched to the type of discharge identified.

Often the source of the non-storm water discharge will not be able to be readily identified. Procedures will be identified in the SWMP that the District staff will use to identify the source. Generally the investigation would start at the downstream end of the basin and work upstream. Procedures may include smoke testing or the storm and possibly sanitary sewer systems, and dye testing of suspected drains or connections. TV inspection may be required of suspected reaches.

If a specific business or industry is identified as the source of the non-storm water discharge the site will be visited and a visual examination of the piping connections, review of the plumbing and architectural plans will be examined. An assessment of whether it is a one-time occurrence or a chronic situation will be made. Appropriate BMPs will be identified. The BMPs may include education to correct the behavior that caused the discharge and removal of illicit connections to the storm drainage system. Regardless, enforcement action may be required as described under Section 4.2.3.2.2.

Illegal dumping is the disposal of waste in an unpermitted area, such as a back area of a yard, stream bank or other off-road area. Illegal dumping can also be the pouring of liquid wastes or disposing of trash down storm drains. The Indian Hills General Improvement District MS4 will employ public education as a means of minimizing storm water pollution due to illegal dumping. Public education materials will be developed to alert the citizens and business and industry community to the water quality consequences of illegal dumping and provide clues to help citizens identify illegal dumping activities. Signs will be developed and installed at significant, potential, dumping areas. The information will urge citizens to call the storm water hot line to report illegal dumping activities.

Indian Hills General Improvement District will develop a print program which alerts citizens to the fact that dumping of liquid waste or trash down storm drains is not allowed. Public education materials will be developed for the business and industry community to identify the proper way of transporting and handling liquids. The information will also contain the emergency response telephones numbers to call in the event of a spill.

The Storm Water Management Plan will include the following:

- Procedures for locating priority areas that may include higher likelihood of illicit connections
- Procedures for tracing the source of an illicit discharge, specific techniques to detect the location of the source
- Procedures for removing the source of the illicit discharge

- Procedures for program evaluation and assessment

4.2.3.2.5 *How the permittee plans to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Include in the permittees description how this plan will coordinate with the public education minimum measure and the pollution prevention/good housekeeping minimum measure programs.*

The Indian Hills General Improvement District MS4 will provide information to citizens and business community through public workshops, print or video media or on the storm water web site regarding illicit discharges. The information will be prepared in a similar format to the general storm system information and will reinforce and build on all the other information on storm water pollution. The information provided in the MS4 staff training regarding pollution prevention/good housekeeping will emphasize the hazards of improper disposal of wastes.

The Indian Hills General Improvement District MS4 will provide a point of contact where citizens can call to report illicit discharges to the storm water system. This will be the same point of contact citizens will be directed to call for additional information on storm water pollution, volunteer opportunities or complaints.

The illicit detection effort will be coordinated with stream steward teams to provide periodic monitoring and recordkeeping to develop a baseline condition for the major drainage outfalls in the MS4.

4.2.3.2.6 *Who is responsible for overall management and implementation of your storm water illicit discharge detection and elimination program and, if different, who is responsible for each of the BMPs identified for this program*

Indian Hills General Improvement District's Field Operations Division will be responsible for the overall management and implementation of the illicit discharge detection and elimination program, under the direction of the General Manager.

4.2.3.2.7 *How the permittee will evaluate the success of this minimum measure, including how the permittee selected the measurable goals for each of the BMPs.*

The illicit connection program will be evaluated based on several criteria.

- Storm sewer map showing major outfalls and sub-basins developed in GIS format.
- Semi-annual update of the storm sewer map.
- Staff trained in answering questions, logging complaints and tips and following up on complaints and tips.
- Outfall monitoring program had been developed and monitoring conducted.
- When a non-storm water discharge was identified at an outfall was it able to be found and corrected.

- Public education materials been developed and distributed.
- Citizens have demonstrated understanding of the program through increased use of regulated hazardous waste collection centers or calls to the hotline to report illegal dumping activities.
- Staff have been trained in procedures to detect illicit connections.

Timeline

- **2006** - Develop storm sewer map.
- **2007** - Adopt illicit discharge program ordinance. Provide information to citizens and business community regarding illicit discharges and the detection and enforcement program that will be followed.
- **2008** - Provide District contact person to act as clearinghouse for notification of illicit discharge and education. Staff trained in illicit detection program and procedures.

4.2.4 Construction Site Runoff Control

The Carson River watershed is listed on the NDEP 303d list for iron (total), total phosphorous, total suspended solids, temperature, turbidity and mercury (reach from New Republic to Dayton Bridge). A major source of total phosphorous, total suspended solids and turbidity is sediment carried from construction sites. Runoff from construction sites may also contain oil/grease, solid and sanitary wastes, pesticides, and construction chemicals. The SWMP will contain requirements for erosion and sediment control and pollution control for construction sites. The requirements will include a combination of plan review and structural BMPs.

4.2.4.1 *Permit requirement. The permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the permittees small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activities disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the NPDES permitting authority waives requirements for storm water discharges associated with small construction activity in accordance with 122.26(b)(15)(I), the permittee are not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites. The permittee's program must include the development and implementation of, at a minimum:*

The Indian Hills General Improvement District MS4 will develop, implement and enforce a program to reduce pollutants in storm water runoff from construction activities that result in land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre will be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

4.2.4.1.1 *An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, or local law;*

The Indian Hills General Improvement District MS4 will develop, adopt and enforce an ordinance to require erosion and sediment controls and ensure compliance, and requirements for construction site operators to implement appropriate erosion and sediment control BMPs; trash management BMPs; procedures for site plan review that includes consideration of potential water quality impacts; procedures for receipt and consideration of information submitted by the public regarding erosion and sediment control problems; and procedures for site inspection and enforcement of control measures.

Potential enforcement mechanisms may include fees for review of storm water site plans and erosion and sediment control plans, fees for inspection of construction projects, bonding requirements to assure that erosion/sediment control measures are installed and maintained until all erosion/sediment control measures are approved.

4.2.4.1.2 *Requirements for construction site operators to implement appropriate erosion and sediment control best management practices;*

Construction site operators will be required, by ordinance, to implement erosion and sediment control BMPs. A written menu of BMPs will be provided via brochures and permit information.

BMPs will include the following:

- Mark clearing limits
- Establish construction access including vehicle wash areas
- Control flow rates
- Install sediment controls
- Stabilize soils
- Protect slopes
- Protect drain inlets
- Stabilize channels and outlets
- Control pollutants
- Management of pH modifying sources
- Maintenance of the BMPs

The SWMP will contain specific information and requirement for erosion and sediment control facilities including sizing and design criteria.

4.1.4.1.3 *Requirements for construction site operators to control waste such as discharged building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;*

Construction site operators will be required, by the ordinance, to control building wastes, chemicals, litter and sanitary wastes to prevent storm water pollution. A written menu of BMPs will be provided via brochures and by staff and in the public education portion of the Storm Water Management Program.

4.1.4.1.4 *Procedures for site plan review which incorporate consideration of potential water quality impacts;*

One of the requirements that will be included in the erosion and sediment control ordinance will be a review of the storm water site plan and the construction plans to verify that erosion and sediment control and site maintenance measures adequate to prevent water quality impacts will be employed. The storm water site plan is a comprehensive plan that will contain all of the technical information and analysis necessary for regulatory agencies to evaluate a proposed new development or redevelopment project of compliance with storm water requirements. The requirements of the storm water site plan will be determined during the development of the ordinance. The storm water site plans will include the following information:

- Analysis of the existing conditions
- Total acreage of disturbed soil
- Sizes of detention/retention basins
- Potential receiving water
- Preliminary development layout
- Off-site analysis
- Permanent storm water control plan
- Construction storm water pollution prevention plan
- Erosion and sediment control plan

4.2.4.1.5 *Procedures for receipt and consideration of information submitted by the public; and*

A storm water/water quality clearinghouse for citizen complaints or tips regarding storm water issues on construction sites will be instituted. This clearinghouse will also collect the information on illicit discharge complaints discussed above, provide general information about prevention of storm water pollution and assist callers in finding opportunities to participate in storm water related projects. The clearinghouse will accept complaints/tips, record the information and alert the MS4 enforcement personnel. The clearinghouse will document the action taken.

4.2.4.1.6 *Procedures for site inspection and enforcement of control measures.*

The Indian Hills General Improvement District MS4 will train inspection personnel. The inspectors will be knowledgeable in erosion/sediment control methodology, will be able to determine erosion/sediment control programs that are not adequate and will have the authority to take enforcement actions.

4.1.4.2 *Decision process. The permittee must document the decision process for the development of a construction site storm water control program. The permittees rationale statement must address both the overall construction site storm water control program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement must include the following information, at a minimum:*

4.2.4.2.1 *The mechanism (ordinance or other regulatory mechanism) the permittee will use to require erosion and sediment controls at construction sites and why that mechanism was chosen. If the permittee needs to develop this mechanism, describe the plan and the schedule to do so. If the permittees ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the SWMP description.*

The Carson River is listed on the 2002 303(d) list for total phosphorus, total suspended solids and turbidity. A major source of these constituents in urban areas is sediment runoff from construction sites. As a site is cleared and graded erodible soils are exposed and storm water runoff can easily cause erosion that results in sediment being carried off site. The Indian Hills General Improvement District MS4 will develop an ordinance to require erosion and sediment controls at construction sites.

The ordinance method was chosen so that the appropriate sanctions to ensure compliance could be included in the regulation. The Indian Hills General Improvement District MS4 needs to develop the ordinance, and will do so in conjunction with an existing "Slope re-vegetation Ordinance" already in place. It is anticipated that the new ordinance would be developed during 2006 of the permit cycle and adopted and implemented in 2007.

4.2.4.2.2. *The permittees plan to ensure compliance with the erosion and sediment control regulatory mechanism, including the sanctions and enforcement mechanisms that will be used to ensure compliance. Describe the permittees procedures for when the permittee will use certain sanctions. Possible sanctions include non-monetary penalties (such as stop work orders), fines, bonding requirements, and/or permit denials for non-compliance.*

It is anticipated that the Indian Hills General Improvement District MS4 will include a variety of sanctions in the Construction Site Erosion and Sediment Control ordinance. Sanctions that may be included in the ordinance are as follows:

- Indian Hills General Improvement District must approve construction site plans and erosion and sediment control plans prior to any issuance of a grading or construction permit.
- Requirement for contractor to post a bond that is set aside to repair damage to temporary construction site erosion and sediment controls caused by severe storm flows, high winds, or fallen trees. Funds can be used only if documented inspections that show that erosion and sediment controls are installed and maintained as required.

- The ordinance may set fines for violation of a permit. The fines would be levied after conviction for a violation.
- Stop work order or permit revocation that might be issued when a permit is violated or when development is implemented in a manner found to adversely affect the health, welfare, or safety of persons residing or working in the neighborhood or at development sites, or when there is a risk of injury to persons or property.
- Monetary fine for release of sediment or pollutants from the construction site.

4.2.4.2.3. *The permittee’s requirements for construction site operators to implement appropriate erosion and sediment control BMPs and control waste at construction sites that may cause adverse impacts to water quality. Such waste includes discharged building materials, concrete truck washouts, chemicals, litter and sanitary wastes.*

The *Construction Site Erosion and Sediment Control* ordinance has not been written or approved at this time. Potential minimum requirements that construction site operators may be required to follow include the following:

Preparation of Construction Stormwater Pollution Prevention Plan (SWPP) consisting of the following:

- Mark clearing limits
- Establish construction access
- Control flow rates
- Install sediment controls
- Stabilize soils
- Protect slopes
- Protect drain inlets
- Stabilize channels and outlets
- Control pollutants
- Control dewatering
- Maintain BMPs
- Manage the project

4.2.4.2.4 *The permittee’s procedures for site plan review, including the review of reconstruction site plans, which incorporate consideration of potential water quality impacts. Describe the permittees procedures and the rationale for how the permittee will identify certain sites for site plan review, if not all plans are reviewed. Describe the estimated number and percentage of sites that will have pre-construction site plans reviewed.*

The *Construction Site Erosion and Sediment Control* erosion control ordinance has not been written at this time. A Storm Water Site Plan is a comprehensive report containing all of the technical information and analysis necessary for the regulatory agency to evaluate a proposed

new development or redevelopment project for compliance with storm water requirements. Potential requirements for site plan review follow:

- Collect and analyze information on existing conditions
- Prepare preliminary development layout
- Perform off-site analysis
- Determine applicable minimum requirements
- Prepare a Permanent Stormwater Control Plan
- Prepare a Construction Stormwater Pollution Prevention Plan

The minimum land disturbing threshold for triggering the preparation of a Storm Water Site Plan has been determined to be 1 acre. Indian Hills General Improvement District will evaluate the potential for erosion and sediment from various size construction sites to determine an appropriate threshold size and determine whether all projects exceeding the threshold size will be reviewed.

4.2.4.2.5 *The permittee's procedure for receipt and consideration of information submitted by the public. Consider coordinating this requirement with the permittees public education program.*

A storm water/water quality clearinghouse for citizen complaints or tips regarding storm water issues on construction sites will be instituted. This clearinghouse will also collect the information on illicit discharge complaints discussed above, provide general information about prevention of storm water pollution and assist callers in finding opportunities to participate in storm water related projects. The clearinghouse will accept complaints/tips, record the information and alert the MS4 enforcement personnel. The clearinghouse will document the action taken.

4.2.4.2.6 *The permittees procedures for site inspection and enforcement of control measures, including how the permittee will prioritize sites for inspection.*

The Indian Hills General Improvement District MS4 has not developed a site inspection program at this time. The Indian Hills General Improvement District MS4 will develop a site inspection program in conjunction with the development of the erosion and sediment control ordinance. Site inspection is required in order to implement an effective erosion and sediment control program. Site inspections must be conducted on each site issued an erosion and sediment control permit.

Development of the inspection program will take into account prioritization of sites, timing of inspections, preparation of a checklist for inspectors and training for inspectors.

Timeline

- **2007** - Develop BMPs for construction site erosion and sediment control.
- **2008** - Develop and adopt construction site storm water control program including

storm water site plan and construction plan review.

- **2009** - MS4 staff trained in construction site erosion/sediment control management and enforcement methods.
- **2010** - Implement complaint clearing house.

Measurable goals

- BMPs for construction site erosion and sediment control developed for the Indian Hills General Improvement District urbanized area .
- Construction site storm water control program ordinance developed and adopted.
- MS4 construction inspection staff trained and operating.
- MS4 clearing house instituted.

4.2.5 Post-Construction Storm Water Management

4.2.5.1 Permit requirement. The permittee must:

4.2.5.1.1 *Develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the permittees small MS4. The permittees program must ensure that controls are in place that would prevent or minimize water quality impacts;*

The Indian Hills General Improvement District MS4 will develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre or projects smaller than one acre that are part of a larger common plan of development.

4.2.5.1.2 *Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the permittees community; and*

The Indian Hills General Improvement District MS4 will develop and implement strategies including a combination of structural and/or non-structural BMPs. The BMPs chosen will be appropriate for the climate and topography of Indian Hills General Improvement District, will minimize water quality impacts and attempt to maintain pre-development conditions. The BMPs chosen will be applied to the general urbanized area Storm Water Management Plan. The Storm Water Management Plan include the following BMPs:

Non-structural BMPs

- Policies to provide requirements and standards to direct development to use low impact develop techniques to the extent practicable

- Policies to minimize impact to sensitive areas, maintain or increase open space, provide buffers along waterways.
- Policies to minimize impervious surfaces and disturbance of soil
- Operation and maintenance programs and policies for storm water facilities
- Education program for developers and the public about designs that minimize water quality impacts.
- Policy and enforcement of Slope Re-vegetation Ordinance requirements

Structural BMPs.

- Filtration practices such as grassed swales, sand filters and filter strips
- Infiltration practices such as infiltration basins and infiltration trenches.
- Runoff pretreatment practices, such as catch basin inserts, manufactured products for storm water inlets.

4.2.5.1.3 Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, or local law; and

The Indian Hills General Improvement District MS4 will develop an ordinance that includes the requirements for storm water quality control from new development and redevelopment. The ordinance will contain the threshold limitations for application of the requirements.

4.2.5.1.4 Ensure adequate long-term operation and maintenance of BMPs.

The ordinance will contain requirements for on-site stormwater management BMPs to infiltrate, disperse, and retain stormwater runoff onsite to the maximum extent practicable without causing flooding or erosion impacts. The objective of this requirement is to use inexpensive practices on individual properties to reduce the amount of disruption of the natural hydrologic characteristics of the site.

The ordinance will contain requirements for flow control to reduce the impacts of increased storm water runoff from new impervious surfaces and land cover conversions. The objective of this requirement is to prevent increases in the stream channel erosion rates that are characteristic of natural conditions. The requirement will attempt to maintain the total amount of time that a receiving stream exceeds an erosion-causing threshold based upon historic rainfall and natural land cover.

The ordinance will contain requirements for run-off treatment. This requirement will prohibit direct discharge of untreated stormwater from pollution generating impervious surfaces. The purpose of runoff treatment is to reduce pollutant loads and concentrations in storm water runoff using physical, biological and chemical removal mechanisms so that beneficial uses of receiving waters are maintained, and where possible, restored.

4.2.5.2 Decision process. The permittee must document the decision process for the development of a post-construction SWMP. The permittees rationale statement

must address both the overall post-construction SWMP and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement must include the following information at a minimum:

4.2.5.2.1 The permittees program to address storm water runoff from new development and redevelopment projects. Include in this description any specific priority areas for this program.

The Indian Hills General Improvement District MS4 will develop, adopt and implement a program to address storm water runoff from new development. This program has not been developed at this time. The program will be developed as a collaborative effort between the public and the Indian Hills General Improvement District. The program will consist of requirements for storm water quality and quantity control from new development and redevelopment projects. The program will contain a menu of BMPs the developer can choose to meet the goal of preventing storm water pollution from leaving a project site.

The Indian Hills General Improvement District MS4 program will require projects to provide flow control to reduce the impacts of increased storm water runoff from new impervious surfaces and land cover conversions. In addition the program will require projects generating a threshold number (yet to be determined) of acres or more of new impervious surface to provide water quality treatment facilities. All sites will be required to provide and maintain storm water BMPs.

The Carson River is listed on the 2002 303(d) list for total phosphorus, turbidity, total suspended solids and temperature among others. Typically, developed sites do not contribute as much total suspended solids and turbidity as construction sites, however the increased flow from increased impervious surfaces found on developed sites can contribute to scouring of drainage ditches or creeks which would contribute to the turbidity, total suspended solids and total phosphorus load in the river. The program for post-development water quality and water quantity control will contain requirements to limit the storm water flow from a developed site to the pre-development flow rate.

Developed sites, especially fertilized landscaped areas, contribute total phosphorus to water systems. The program for post-development water quality and water quantity control will contain requirements to minimize phosphorus runoff through education and site development controls.

4.2.5.2.2 How the permittees program will be specifically tailored for the local community, minimize water quality impacts and attempt to maintain predevelopment runoff conditions.

The post-construction storm water management program will be developed to control the quantity and quality of storm water leaving a developed site. The program will contain a combination of structural and non-structural BMPs. The BMP menu will give the developer the opportunity to implement a design, which will achieve the goal of no net increase in storm water runoff rate and minimization of water quality impacts due to storm water.

The BMPs available to the developer will be ones that are appropriate for use in arid regions. The typical water quality/water quantity treatment facilities, such as dry ponds and infiltration ponds or trenches, can be successfully applied. Other water quality/water quantity treatment features, such as wet ponds and grassed swales, can be used however, the benefit of the feature needs to be assessed against the need to maintain a pool of water or irrigate. The applicability of the methodologies available for combined water quality control and water quality treatment will be assessed during the development of the post-construction storm water management program.

4.2.5.2.3 *Any non-structural BMPs in the permittees program, including as appropriate:*

4.2.5.2.3.1 *Policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space, provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation;*

The non-structural BMPs chosen for inclusion in the Stormwater Management Plan will be tailored to work within the existing Indian Hills General Improvement District.

4.2.5.2.3.2 *Policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure.*

The non-structural BMPs chosen for inclusion in the Storm water Management Plan will be tailored to work within the existing Indian Hills General Improvement District.

4.2.5.2.3.3 *Education programs for developers and the public about project designs that minimize water quality impacts; and*

The SWMP will contain a public education element that will inform developers and the public about the need to minimize water quality impacts and about project designs that minimize water quality impacts. The education materials developed will dovetail with the general storm water quality material that will be developed for the public education element of the SWMP.

4.2.5.2.3.4 *Other measures such as minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious area, and source control measures often thought of as good housekeeping, preventive maintenance and spill prevention.*

The ordinance will contain a requirement for source control of pollution that requires that all known, available and reasonable source control BMPs be applied to all projects. The intent of this requirement is to prevent stormwater from coming into contact with pollutants. Source control BMPs are a cost-effective means of reducing pollutants in stormwater and therefore, should be a first consideration in all projects.

4.2.5.2.4 *Any structural BMPs in the permittee's program, including, as appropriate:*

4.2.5.2.4.1 *Storage practices such as wet ponds and extended-detention outlet structures.*

Wet ponds will probably be among the alternative BMPs listed in the SWMP/CCSWMP, however, wet ponds may not be suited to arid regions. Other storage practices such as dry ponds will also be included as BMPs.

4.2.5.2.4.2 *Filtration practices such as grassed swales, bioretention cells, sand filters and filter strips; and*

Filtration practices will be included in the BMPs recommended for storm water treatment. The use of grass swales, bioretention cells and filter strips in the arid climate of Indian Hills General Improvement District will need to be evaluated due to the need to irrigate these facilities to keep them functional. Sand filters are possible BMP alternatives that may be recommended for filtration practices.

4.2.5.2.4.3 *Infiltration practices such as infiltration basins and infiltration trenches.*

Infiltration basins and infiltration trenches, with treatment prior to the infiltration facility, will be included in the BMPs recommended for storm water treatment and dispersion. Infiltration basins and trenches are appropriate technologies for arid regions.

4.2.5.2.5 *What are the mechanisms (ordinance or other regulatory mechanisms) the permittee will use to address post-construction runoff from new developments and redevelopments and why did the permittee chose that mechanism. If the permittee needs to develop a mechanism, describe the plan and the schedule to do so. If the permittees ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the program.*

Indian Hills General Improvement District will develop, adopt and implement an ordinance to require post-construction runoff standards to be met. It is anticipated that the ordinance will be developed in 2006 and adopted and implemented 2007.

4.2.5.2.6 *How the permittee will ensure the long-term operation and maintenance (O&M) of the selected BMPs. Options to help ensure that future O&M responsibilities are clearly identified include an agreement between the permittee and another party such as the post-development landowners or regional authorities.*

The ordinance will contain a requirement for the developer to provide an operation and maintenance manual for all proposed storm water facilities and BMPs and the party (or parties) responsible for maintenance and operation shall be identified. At any private facilities, a copy of the manual must be retained onsite or within reasonable access to the site, and must be transferred with the property to the new owner. For public facilities a copy of the manual must be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection by the Indian Hills General Improvement District staff.

4.2.5.2.7 *Who is responsible for overall management and implementation of the post-construction SWMP and, if different, who is responsible for each of the BMPs identified for this program.*

Indian Hills General Improvement District Field Operations Division will be responsible for the overall management and implementation of the post-construction SWMP.

4.2.5.2.8 *How the permittee will evaluate the success of this minimum measure, including how the permittee selected the measurable goals for each of the BMPs.*

- Post-construction storm water ordinance developed and adopted.
- Post-Construction Storm Water Management Program instituted and fees collected.
- BMP guidance documents developed.
- Inspection program for existing storm water quantity and quality facilities instituted

Timeline

- **2007** - Institute storm water program and fees.
- **2008** - Develop post construction BMP menu. Develop ordinance.
- **2009** - Adopt ordinance and begin implementation.
- **2010** - Implement inspection program for existing storm water quantity and quality control facilities.

Pollution Prevention/Good Housekeeping for Municipal Operations

4.2.6.1 Permit requirement. The permittee must:

4.2.6.1.1 Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations; and

The Indian Hills General Improvement District will develop and implement an operation and maintenance program including training on storm water pollution prevention at District operated shops and facilities. The goal of this program will be to prevent or reduce pollutant runoff from municipal operations.

4.2.6.1.2 Using training materials that are available from EPA, the Division, or other organizations, the permittee's program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

The Indian Hills General Improvement District pollution prevention/good housekeeping municipal training program will include pollution prevention training in lawn and grounds maintenance, vehicle maintenance and repair, maintenance of the storm water conveyance system and utility construction and maintenance.

4.2.6.2 Decision process. The permittee must document the decision process for the development of a pollution prevention/good housekeeping program for municipal operations. The permittees rationale statement must address both the overall pollution prevention/good housekeeping program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement must include the following information, at a minimum: The permittee's operation and maintenance program to prevent or reduce pollutant runoff from the permittee's municipal operations. The permittee's program must specifically list the municipal operations that are impacted by this operation and maintenance program.

The pollution prevention/good housekeeping BMPs will provide schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the pollution of waters of the United States. BMPs will also include treatment practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

The pollution prevention/good housekeeping program will address the municipal operations within the MS4 that have the greatest potential for generating storm water pollution. Many of the practices that will be included in the pollution prevention/good housekeeping program are

currently practiced by the District. The pollution prevention/good housekeeping program will address the following aspects of municipal operation:

- Park, lawn and open space maintenance
- Vehicle operation and maintenance
- Street sweeping
- Street maintenance and repair
- Storm drainage system cleaning
- Utility construction and repair
- Hazardous materials storage

The municipal fleet operated and maintained by Indian Hills General Improvement District includes vehicles used by field operations division and the recreation program. The District provides preventive maintenance and repair to these through its vehicle operation and maintenance facility.

Indian Hills General Improvement District vehicle maintenance facilities could potentially generate significant loads of hydrocarbons, trace metals and other pollutants that could be carried off-site in storm water runoff. Some of the sources of pollution generated at vehicle maintenance facilities include: solvents, antifreeze, brake fluid and brake lining, batteries, motor oils, fuels, and lubricating grease. Vehicle washing done out-of-doors can introduce pollutants, including nutrients and oils and grease, into the storm water system. The pollution prevention/good housekeeping program will provide BMPs for vehicle repair including such items as working in a building or undercover whenever possible, proper procedures for draining fluids from vehicles and handling materials generated during vehicle repair.

The pollution prevention/good housekeeping program will focus on two aspects of parks and open space management that the District will implement to reduce storm water pollution from municipal grounds keeping operations. Excessive use of plant fertilizers and pesticides can cause significant amounts of storm water pollution. The urban lawn is estimated to receive an annual input of 5 to 7 pounds of pesticide per acre and nutrients at about the same application rates as those used for row crops. The pollution prevention/good housekeeping program will educate the District grounds keeping crews in methods of reducing fertilizer and pesticide application, limiting water use and avoiding land disturbance to minimize potential pollution sources.

The pollution prevention/good housekeeping program will enhance the existing street sweeping program. Regular street sweeping minimizes pollutant export to receiving waters. Sources of storm water pollution that can be controlled by street sweeping include general trash and particulate matter on streets, sand and deicing materials applied in the winter and crushed surfacing top course used in chip sealing operations.

During the development of the pollution prevention/good housekeeping program the District will determine the optimum frequency of sweeping that is in keeping with the available budget and determine additional ways to enhance street sweeping efficiency. These methods could include

controlling parking to assure that the parking lanes can be swept, and scheduling of sweeping for summer and winter months.

Indian Hills General Improvement District routinely cleans the storm drain system. Routine cleaning reduces the amount of pollutants, trash, and debris. The pollution prevention/good housekeeping plan will include instruction on the proper methods of cleaning and waste material disposal.

The pollution prevention/good housekeeping program will include education on the proper erosion and sediment control techniques that should be employed by maintenance crews during utility construction or repair.

The pollution prevention/good housekeeping program will include BMPs that should be followed to properly store, use and dispose of hazardous materials that are used in the municipal operations.

4.2.6.2.1 *Any government employee training program the permittee will use to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. Describe any existing, available materials the permittee plans to use. Describe how this training program will be coordinated with the outreach programs developed for the public information minimum measure and the illicit discharge minimum measure.*

The emphasis of the pollution prevention/good housekeeping program is training of employees to increase awareness of the storm water pollution potential of everyday activities and provide instruction on methods that can be used to prevent or minimize storm water pollution. Various sectors of the Indian Hills General Improvement District work force currently receive limited training in BMPs for safe handling of potentially harmful materials and proper disposal techniques for waste materials including wastes from vehicle maintenance and repair. The pollution prevention/good housekeeping program will develop training programs for the proper handling of materials used by staff or generated during routine operations including, but not limited to, materials removed during storm drainage cleaning, hazardous materials, yard wastes and the use of lawn care products. These training programs will be extended to all employees who work in areas where the training may be appropriate.

Indian Hills General Improvement District sewer and storm water utility personnel will be trained in methods of detecting illicit connections as part of the illicit connection reduction minimum control measure. This training will also carry over to the pollution prevention/good housekeeping program in that it will emphasize the proper methods of waste disposal applicable to both residential/commercial and municipal operations.

4.2.6.2.2 *The permittees program description must specifically address the following areas:*

4.2.6.2.2.1 *Maintenance activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the permittee's MS4.*

The reduction of floatables and other pollutants to the storm drainage system will require a multi-faceted approach. The specific programs for each of the municipal operations included under the pollution prevention/good housekeeping program will include training on the proper methods of waste disposal and performance of maintenance activities that will prevent the release of floatables and other pollutants. Maintenance activities will be scheduled to allow enough time to make sure that the work area is thoroughly cleaned and secured at the end of the workday. The pollution prevention/good housekeeping programs will emphasize the importance of routine and long-term inspections and refresher training sessions to assure that all employees maintain high standards of pollution prevention awareness.

4.2.6.2.2.2 *Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yard, waste transfer stations, fleet or maintenance shops with outdoor storage areas, and salt/sand storage locations and snow disposal areas the permittee operates*

The pollution prevention/good housekeeping program will formalize many of the existing management strategies, training and procedures currently used to reduce or eliminate discharge of pollutants from the various municipal operations. The program will include instruction in and compliance with the following measures.

- Street sweeping –
 - ✓ Planning for contracted operation of street sweeping equipment
 - ✓ proper disposal of materials swept off of streets and parking lots

- Maintenance and storage yard –
 - ✓ hazardous waste material handling and storage procedures
 - ✓ proper disposal of waste materials
 - ✓ good housekeeping of work areas and grounds

- Vehicle maintenance –
 - ✓ maintenance of vehicles in enclosed areas
 - ✓ prevention of leaks from parked vehicles
 - ✓ proper disposal of waste materials

- Utility repair or construction –
 - ✓ erosion and sediment control techniques
 - ✓ construction site good housekeeping

- Road Deicing Material Application and Storage –
 - ✓ concreted and covered storage
 - ✓ appropriate application rates
 - ✓ street cleaning after use

4.2.6.2.2.3 *Procedures to ensure that proper disposal of waste removed from the permittee’s MS4 and the permittee’s municipal operations, including dredge spoil, accumulated sediments, floatables, and other debris.*

The pollution prevention/good housekeeping program will contain waste disposal procedures that will be followed for the disposal of wastes generated by the municipal operations. Indian Hills General Improvement District will be creating an enhanced vector waste disposal site at the the wastewater treatment plant expansion site. The pollution prevention/good housekeeping program will include BMPs for vector waste disposal.

4.2.6.2.2.4 *Procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices.*

New flood hazard management projects will be required to follow the rules and regulations developed under the Construction Site Storm Water Runoff Control and Post-Construction Storm Water Management in New Development and Redevelopment minimum control measures. As improvements are made to existing flood management projects the MS4 will evaluate whether additional water quality protection devices or practices are warranted.

4.2.6.2.3 *Who is responsible for overall management and implementation of the pollution prevention/good housekeeping program and, if different, who is responsible for each of the BMPs identified for this program.*

Indian Hills General Improvement District Development Services will be responsible for preparing and implementing the pollution prevention/good housekeeping program.

4.2.6.2.4 *How the permittee will evaluate the success of this minimum measure, including how the permittee selected the measurable goals for each of the BMPs.*

The pollution prevention/good housekeeping program will be a success when all employees who work in areas that could potentially contribute storm water pollution have received training in pollution prevention/good housekeeping measures and the measures have been fully implemented.

At this time it is anticipated that the pollution prevention/good housekeeping program will consist of stand-alone sections that address the various municipal operations. The measurable goals of the overall pollution prevention/good housekeeping program are as follows:

Timeline

- **2006** - Prepare the pollution prevention/good housekeeping program.
- **2007** - Provide training for the appropriate employees.
- **2008** - Revise program as necessary based on employee and management assessment of the program.
- **2009** - Incorporate appropriate information from the municipal pollution prevention/good housekeeping program into the informational brochures and videos.

The additional measurable goals for the park, lawn and open space maintenance programs are as follows.

- Park, lawn and open space maintenance -
 - ✓ Prepare IPM program in 2008
 - ✓ Implement IPM program in 2009
 - ✓ Develop instructional information suitable for the public based on the Indian Hills General Improvement District program of good housekeeping for park, lawn and open space maintenance in 2010

Timeline

- **2006** - Develop and implement Municipal Pollution Prevention/Good Housekeeping program for park, lawn and open space maintenance; vehicle operation and maintenance; street sweeping; storm drainage system cleaning; utility construction and repair; and hazardous materials storage areas.
- **2007** - Provide training for appropriate employees.
- **2008** - Prepare Integrated Pest Management program.
- **2009** - Evaluate the program instituted in 2006. Modify and expand to additional municipal operations.
- **2010** - Incorporate appropriate information from the municipal pollution prevention/good housekeeping program into the informational brochures and videos

The water quality control points that apply to the Indian Hills General Improvement District MS4 area, from downstream to upstream, are;

- Dayton Bridge – NAC 445.156 (reach from Dayton Bridge to New Empire),
- New Empire – NAC 445.155 (reach from New Empire to Mexican Gage), and
- Mexican Gage – NAC 445.154 (reach from Mexican Gage to Cradlebaugh Bridge).

Clear Creek is designated as a Class A Waters (NAC 445A.124) from its origin to gauging station number 10-3105 located in NE ¼ NE 1/4m section 1, T. 14N., R. 19E., M.D.B. and M. Downstream of the gauging station the water quality criteria for the Carson River reach from Mexican Gage to Cradlebaugh Bridge apply.

The pollutants of concern for the individual reaches are shown in Table 1.

A. LIST OF TABLES

Carson River 202 303d List (Revised by EPA 11/20/2002) 2

**Table 1
Carson River
2002 303d List
(Revised by EPA 11/20/2002)**

Reach	River Mile	Pollutant
Cradlebaugh Bridge to Mexican Ditch Gage	6.34 mile	Iron (total) Temperature Total phosphorus Total suspended solids Turbidity
Mexican Ditch Gage to New Empire	7.82 mile	Iron (total) Temperature Total phosphorus Turbidity PH
New Empire to Dayton Bridge	16.82	Iron (total) Mercury (total) Total phosphorus Total suspended solids Chlorides PH Turbidity

and Section 3.2 Indian Hills General Improvement District Urbanized Area Discharges to Clear Creek.

The Carson River reaches in the vicinity of the Indian Hills General Improvement District MS4 include [Cradlebaugh Bridge to Mexican Ditch Gage \(NV08-CR-08\)](#), [Mexican Ditch Gage to New Empire \(NV08-CR-09\)](#) and [New Empire to Dayton Bridge \(NV08-CR-10\)](#).

A TMDL was developed for the Carson River in the early 1980's (Water Quality Management (208) Plan for the Carson River Basin, Nevada 1982). This TMDL contained maximum daily loads for dissolved oxygen, biochemical oxygen demand, orthophosphates, nitrates and total dissolved solids. None of these pollutants are listed in the current 303(d) list. NDEP is in the process of updating the Carson River TMDL (Nevada's 2002 303(d) List, October 2002).