

Illicit Discharge Detection and Elimination Screening Project 2006 Summary

Project Description

Illicit discharges are broadly defined as polluted, non-stormwater discharges entering the storm sewer system. Examples include improper cross-connections, leaking sewer lines or septic systems, and illegal dumping of materials such as waste oil or paint.

Illicit discharges may contribute to exceedences of water quality criteria in receiving waters during baseflow conditions, and may also increase pollutant levels in stormwater.



Section S5.B.8.g.ii of Clark County's 1999 NPDES permit requires an ongoing project to identify and remove illicit discharges entering the county's municipal separate storm sewer system. The IDDE Screening project fulfills the current requirement and is designed to meet future requirements of the 2007 NPDES Phase 1 municipal stormwater permit for Western Washington.

The project is based on methods described in *Illicit Discharge Detection and Elimination: A guidance manual for Program Development and Technical Assessments* (Center for Watershed Protection, October 2004), as required by the 2007 permit.

The overall goal of the IDDE Screening project is to detect, isolate, and eliminate illicit discharges to Clark County's municipal separate storm sewer system (MS4).

Project objectives are to:

- Identify dry-weather flows at mapped outfalls
- Conduct dry-weather field screening and analytical testing to detect illicit discharges
- Conduct and/or coordinate followup investigations to isolate sources when suspected illicit discharges are detected
- Refer suspected illicit discharges to appropriate staff or agencies for source removal
- Perform followup inspection or monitoring to confirm that source removal activities are successful

The IDDE Screening project follows several steps in each watershed, including: initial screening, follow-up investigations, referral for source removal, and effectiveness monitoring.

The initial screening step proceeds systematically through county watersheds in coordination with the Stormwater Needs Assessment Program (SNAP) and at a scope sufficient to meet NPDES permit requirements for screening implementation. Initial screening in each subwatershed is

expected to require no more than one year, and multiple subwatersheds may be screened in a given year.

Subsequent followup investigations and source removal tasks lag behind initial screening work due to the time required to plan and carry out these activities. The timing and order of followup investigations depends on the number, complexity, and severity of problems discovered during initial screening. Each suspected illicit discharge is addressed as an individual case study. Summaries for each case are produced separately on completion of source removal efforts.

Overview of 2006 project activity

Needs Assessment activities and IDDE Screening were completed in the Whipple Creek watershed during 2005 and 2006 as the SNAP was being developed. Initial screening activities were completed from June-October 2006 and are summarized in this report.

Based on the county's Clarkstorm database, as of May 2006 there were 350 mapped stormwater outfalls in the Whipple Creek watershed, consisting primarily of pipe outfalls and roadside ditches. Three-hundred ten of these outfalls were screened for illicit discharges, thirty-six were eliminated from the sample set (outfalls that do not drain to surface water bodies, emergency spillways, etc), and the remaining four could not be reached due to site conditions. One additional outfall was screened based on a request by Clark County Public Works Environmental Permitting staff.

Samples were collected at 23 flowing outfalls, and followup investigations were performed at 6 outfalls. One serious illicit discharge was located and removed through this process. A second significant illicit discharge was discovered through SNAP field work in 2005 and removal activities are ongoing as of November 2006.

Screening Approach

Detailed methods may be found in the Quality Assurance Project Plan for the IDDE Screening project. Figure 1 outlines the general project approach.

The process begins with systematic outfall screening using a series of physical and water quality indicators. Screened outfalls may be non-flowing, flowing, or an obvious illicit discharge. Obvious illicit discharges are immediately referred for either removal or further investigation to isolate the source. Field and analytical results from flowing outfalls are interpreted using a flowchart and selected industrial discharge benchmarks (see QAPP). Non-flowing outfalls are assessed for possible intermittent discharges and may be sampled using off-hours monitoring, caulk dams, sandbags, or other methods to capture intermittent flow.

If an illicit discharge is suspected, a followup investigation attempts to isolate the source. Depending on the type of discharge, this may include investigations of the upstream storm drain network, the upland drainage area, a specific business or pollution-generating site, septic systems, or sanitary sewer infrastructure. These followup investigations may be performed by county departments or by other agencies.

When a source or source area has been isolated to the extent practicable, the case is referred to the appropriate agency or county department for removal. County technical assistance staff, code enforcement officers, or public health staff may be involved, in addition to local sewer districts and the state Department of Ecology. Effectiveness monitoring is used to confirm source removal.

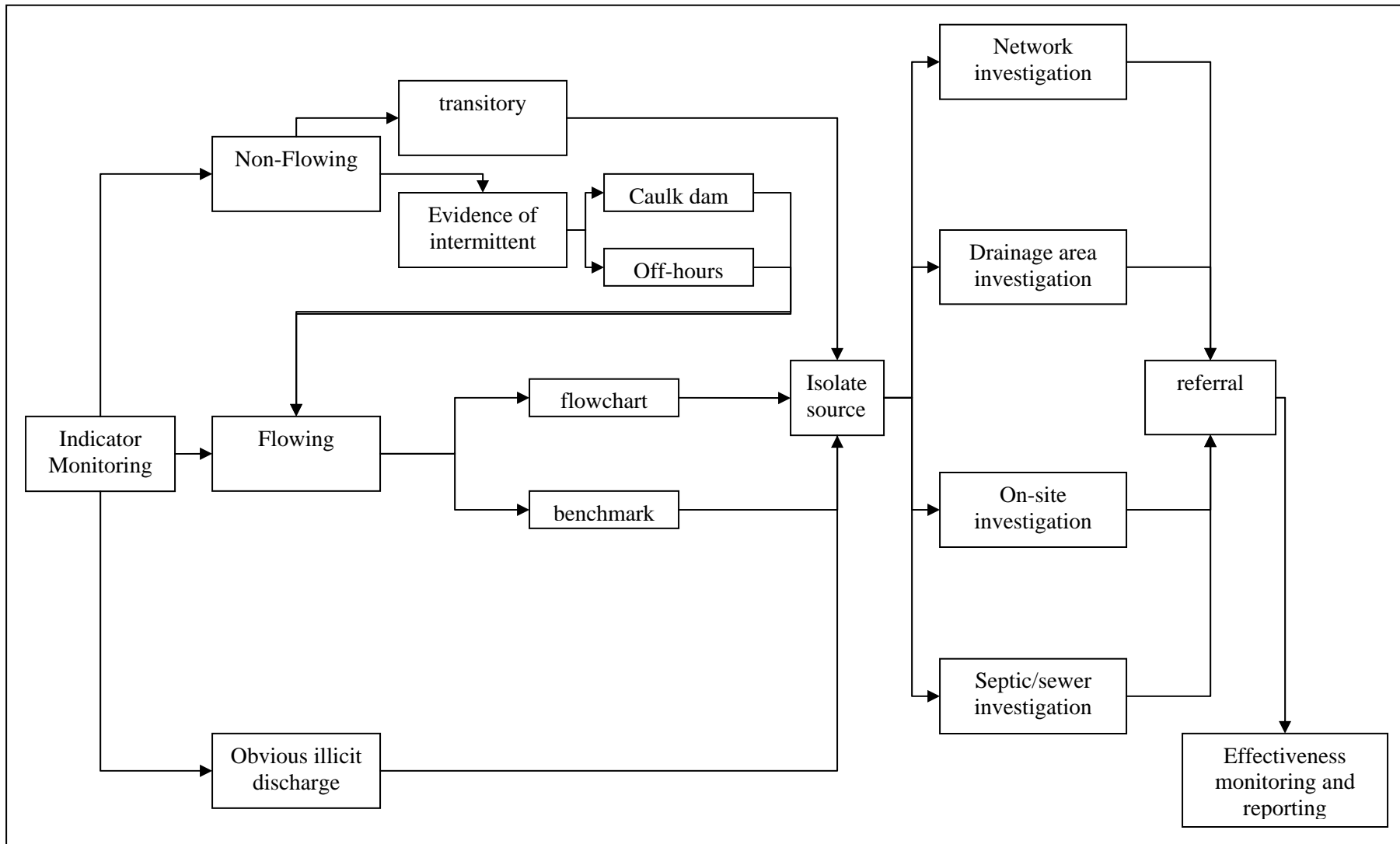


Figure 1. IDDE Screening project framework. (adapted from Center for Watershed Protection, October 2004)

Results

Project activities and results are presented in a series of maps and selected summary metrics. Case reports summarizing activities at specific illicit discharge sites (including site visits, investigations, referrals, and removal activities) are on file in the Water Resources section.

Figure 2 shows the general location of the 350 mapped stormwater outfalls in Whipple Creek, and Figure 3 summarizes notable screening activities including outfalls where water samples were collected, followup investigations performed, referrals made, and sources removed.

Table 1 summarizes project activities by major category, including the number of issues investigated, referred, and removed to date.

Among 311 outfalls screened, potential illicit discharges were suspected at six outfalls. Follow-up investigations were conducted for all six locations. In two cases an illicit discharge was confirmed and a source area adequately pinpointed to trigger a referral for removal. Followup investigation samples at the other four locations did not indicate ongoing illicit discharges. These four locations will be re-visited during 2007 screening to check for recurrence and/or the presence of intermittent discharges. No illicit discharges were reported through citizen complaints in 2006.

As of November 2006, one illicit discharge has been removed and one referral is ongoing. No cases have been closed without resolution. Details concerning these followup activities are included in the individual case summaries.

Table 1. 2006 project activity summary as of November 2006.

Metric	Number
# of outfalls screened	311
# of outfalls with sufficient flow to collect water samples	23
# of suspected illicit discharges	6
# of investigations initiated	6
# of illicit discharge sources located	2
# of outfalls to be re-visited in 2007	4
# of referrals	2
# of illicit discharges removed	1
# of investigations and referrals ongoing	1
# of cases closed without resolution	0

The 2007 Western Washington Phase I NPDES permit will require that followup investigations must be initiated within 21 days from the discovery of a suspected illicit discharge. The average time between discovery and initiation of followup investigations in 2006 was twelve days, ranging from one to 19 days. “Discovery” is defined as the date when a discharge is first suspected or when lab results are received indicating a potential discharge. “Initiation” is defined as the beginning of planning for the followup investigation, typically at least seven days prior to field followup.

Field and laboratory data for all initial screening visits are included in Appendix A.

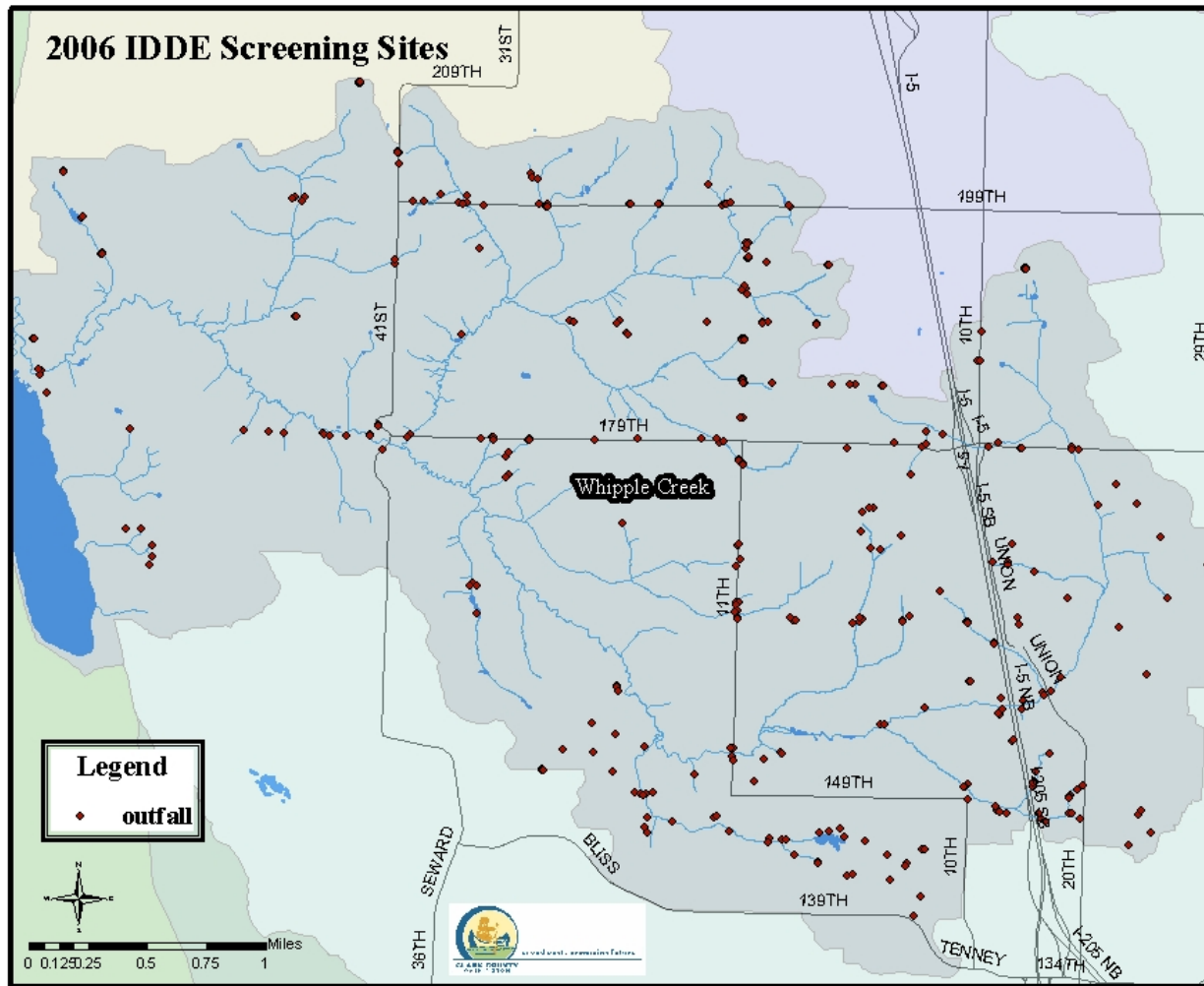
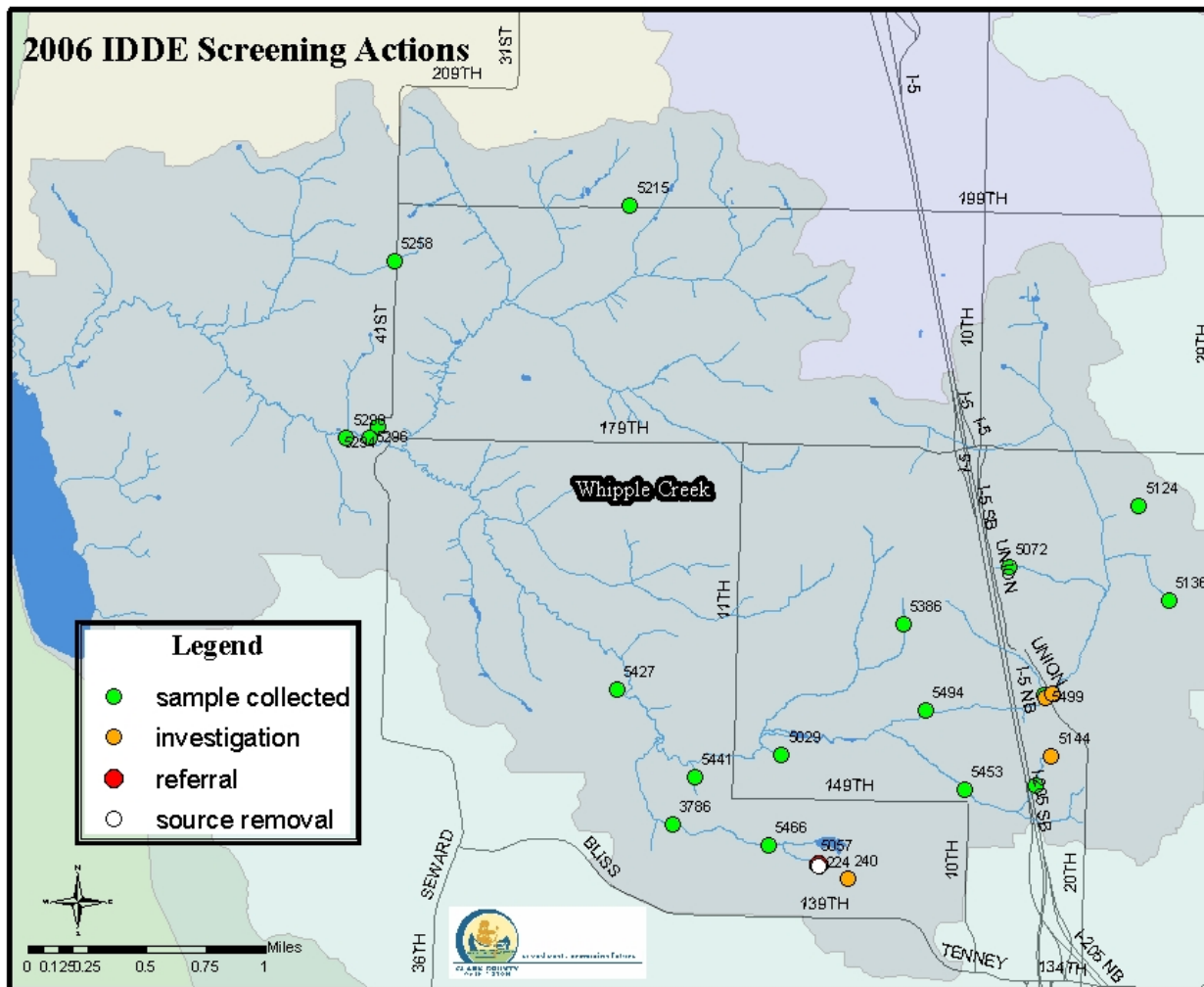


Figure 2. General location of outfalls screened in 2006.



Adaptive Management

Project tracking metrics

Several additional metrics are calculated to enable project managers to better evaluate the project and document general patterns in screening activities. The tables below summarize the types of discharges suspected based on screening data, the screening activity responsible for discovering the discharge, and the type of followup investigation utilized.

Table 2. Suspected discharge types for initial outfall screening

Type of discharge suspected at screened sites	Number
dry or too little flow to sample	288
natural/clean water	17
sanitary	4
washwater	1
industrial	1
TOTAL SITES SCREENED	311

Table 3. Reason illicit discharge suspected

Reason suspected	Number
flowchart	5
benchmark	0
field observation	1
citizen complaint	0

Table 4. Type of followup investigations utilized

Investigation type	Number
Storm Network	5
Drainage area	0
On-site	2
Septic/Sewer	1

Table 2 indicates that out of 23 screened sites where flow was present, 17 appeared to consist of clean water flows. Sanitary sources were the primary suspected illicit discharge type (4), while washwater and industrial sources accounted for one suspected discharge each. Table 3 shows that the flowchart method detected the most potential illicit discharges, followed by field observations. Neither citizen complaints nor industrial flow benchmarks indicated any potential illicit discharges in 2006. The majority of followup investigations involved the upstream storm-drain network, though two on-site investigations and one sewer investigation were also conducted (Table 4).

The level of participation by outside agencies and departments is also of interest to project managers. Table 5 below outlines agency involvement.

Table 5. Agency and County Department involvement in investigations and referrals.

Agency or Department	Investigation	Source Removal
CC Public Works Water Resources	6	2
Clark Regional Wastewater District	2	1
Clark Public Utilities	0	0
CC Code Enforcement	0	0
WA Department of Ecology	1	1
CC Public Health	1	0

Interagency Cooperation

Interagency cooperation is a critical component of followup investigations and source removal activities. During 2006, project staff met with representatives from Clark County Public Health and the Clark Regional Wastewater District to establish lines of communication and a process for addressing investigations and referrals. Details of this standard process are incorporated in Version 2.0 of the Quality Assurance Project Plan.

Data management

Data management procedures were not finalized for the 2006 project due to ongoing modifications to Water Resources' overall data management structure. As this structure is finalized during 2007, IDDE Screening data will be effectively linked with other databases and tools developed to facilitate data entry. Details of these procedures will be incorporated in future versions of the Quality Assurance Project Plan.

Project Modifications

A number of modifications will be made to increase project efficiency in 2007 and may be reflected in Version 2.0 of the QAPP.

1) *Dry weather definition:* For planning purposes, "dry" means no measurable rainfall (<0.01") in the past 48 hours. If rain has fallen in the general vicinity within 48 hours, screening will typically not be conducted.

2) *Color wheel:* The color wheel will not be used for routine screening, EXCEPT in those rare cases where visual observation indicates extensive coloration.

3) *Ditch outfalls:* Ditch outfalls comprise a high percentage of the existing outfalls in many areas, but tend to have a very low occurrence of dry weather flow and illicit discharges. In future years, the IDDE Screening project will be expanded to cover several subwatersheds per year, increasing the need for efficiency. Ditch outfalls will NOT be logged with the GPS and data sheets will NOT be filled out in the field except for ditches where water samples are collected or where illicit discharges are suspected. Electronic data entry will be conducted in the office for dry ditch outfalls.

4) *Water samples from ditch outfalls.* If flow is sufficient to collect samples relatively quickly and with no contamination, samples will be collected for ALL standard parameters. However, in many cases, ditch outfalls have very low flows that are difficult to sample effectively. In these cases, staff will attempt to collect a clean sample for Fecal Coliform ONLY. Field meter readings will be collected ONLY if there is sufficient flow to submerge the probes or if a sufficient volume can be collected in a clean container to obtain measurements.

5) *Unreachable or hidden outfalls.* If a mapped outfall cannot be located or is unreachable due to vegetation, terrain, or property access, one of several options may be pursued:

- a) skip the outfall. Further steps taken by the project manager may include:
 - i) contact Public Works Operations and request a crew to clear vegetation and/or locate outfall.
 - ii) contact landowner for access permission
 - iii) remove the outfall from consideration under IDDE Screening

b) if the outfall is from a stormwater facility and the facility is obviously dry, assume the outfall is also dry and complete as much of the data collection as possible. In most cases, such outfalls will also be referred to Operations for vegetation clearing.

c) locate the nearest “upstream” accessible point (manhole, ditch access point, etc) and perform the screening at that location. Note the change under a comment field in the data dictionary.

6) *GPS data logger*: Use of TerraSync software and data dictionaries with the Trimble GeoXT GPS unit will be discontinued. An ArcMap software application will be developed to provide better access to stormwater infrastructure data in the field and to facilitate more efficient data collection.

7) *Field photos*: Digital photographs will only be taken for outfalls where water samples are collected and/or where an illicit discharge is suspected during initial screening. Long-term photo storage will be limited to those locations where followup investigations are performed or illicit discharges are discovered.

For more information about the IDDE Screening project contact:

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Or, visit the Clean Water Program website:
www.clark.wa.gov/water-resources/index.



Appendix A: Initial screening field and laboratory data, 2006.

To be added in 2007 pending Water Resources data management design. The 2006 dataset is available from Water Resources on request.