CITY OF OAKLAND
AGENDA REPORT

TO: Office of the City Administrator
ATTN: Deborah Edgerly
FROM: Public Works Agency
DATE: March 28, 2006

RE: STATUS REPORT ON THE SEWER REHABILITATION PROJECT ALONG WITH A DISCUSSION OF OPPORTUNITIES FOR BANK STABILIZATION FOR CHIMES CREEK

SUMMARY

This is an informational report on the status of the rehabilitation of sanitary sewer pipes along Chimes Creek and opportunities to address a long-term solution to erosion problems in this area.

Two sanitary sewer lines serve the neighborhood surrounding Chimes Creek, one in each of the banks of the creek. These pipes were constructed over eighty years ago. There have been numerous sanitary sewer overflows in this area, which were the result of several factors. They include the general deterioration of old clay pipes and resultant tree root intrusion that creates blockages, inflow and infiltration of rainwater and groundwater into the older upstream pipes that cause surcharges in the manholes, and ongoing creek bank erosion that has exposed one of the sewer pipes and caused it to break. To address these problems, three sanitary sewer improvement projects are planned for this area that will improve the condition of the aging system and provide bank stabilization at the most critical areas to protect the sewer pipe. Construction on these projects will be complete this summer. To prevent further overflows in the interim, the City's Maintenance Section initiated a more frequent inspection program for sewer pipes in the creek area.

Bank erosion along Chimes Creek has been an ongoing problem since the early 1980's and may continue to present problems into the future. This problem is not unusual for many natural creeks in urban settings. Due to urbanization, erosion of banks and incising of the bottom of such creeks is accelerated and makes them more and more unstable over time. Opportunities for reducing this erosion include bypassing the highest flows, selective use of plant materials to help stabilize the bank, and other methods to armor the banks. A feasibility analysis of these options is needed to select the most appropriate stabilization method for this site, and to determine what such a project might cost if funding could be obtained.

This is an informational report, and no Council action is requested.

FISCAL IMPACT

This is an informational report and there are no fiscal impacts. The three sanitary sewer improvement projects planned for the Chimes Creek area this year have a combined cost of approximately $1.2 million. This funding was previously budgeted in the respective projects.

BACKGROUND

Chimes Creek Setting

Chimes Creek is a natural creek with headwaters that begin above the I-580 freeway. The section discussed in this report runs between Hillmont and Delmont Avenues and eventually into Seminary Creek below the Mills College Campus (see *Attachment A*). Chimes Creek has been the site of ongoing erosion that began to greatly accelerate during the El Niño winter of 1982-1983. At that time, significant erosion occurred along the portion below Nairobi Place, where some of the banks reach seventy feet in height. Fewer impacts were seen in the area above Nairobi Place with lower banks, but inspections at the time indicated the beginning of erosion in this location.

In the mid-1990's the City of Oakland and the Alameda County Flood Control District collaborated in a joint project to repair damage to the creek banks between Nairobi Place and Lundholm Avenue and to replace the sewer pipes in that reach of the creek. A concrete box culvert was constructed to carry the highest storm flows, leaving the lower winter and summer flows to remain in the creek above the culvert, essentially preserving the natural creek features.

Since that time, erosion has continued to progress above Nairobi Place, and residents along Chimes Creek have reported numerous problems with the condition of the banks and resulting problems with the sanitary sewer system in the area. Recently, a fallen tree caused the creek to change course and erode its northerly bank exposing and further breaking the City's sewer pipe in that location. The City has provided a temporary repair for the collapsed pipes but a long-term solution was needed to correct this erosion problem and is addressed in a capital project planned for construction this summer.

Sanitary Sewer System

Sanitary sewer pipes within Chimes Creek are comprised of two branches. They are situated along the southerly and northerly banks of the creek. The southern branch traverses through the entire length of the creek from Hillmont Drive to Lundholm Avenue and serves the surrounding neighborhood. The northern branch serves about 12 residences on the northerly bank of the creek fronting Hillmont Drive and joins the other branch at Nairobi Place. These pipes are all located in public easements. The creek flows through a residential area that is heavily vegetated. Stream banks in some areas are very steep. The sanitary sewer pipes within this area date back to 1920's when this area was first developed. The condition of these pipes is poor. It is the northerly pipe that failed due to bank erosion; the southerly pipe has had ongoing overflows

related to blockages from tree roots and from infiltration and inflow of rainfall and groundwater into the older pipes that serve the upstream neighborhood.

In the mid 1990's, following the successful joint project between the City and the Alameda County Flood Control District, further discussions with the County were held to consider a similar project above Nairobi Place. The City requested that the County consider this location for additional creek improvements, hoping to incorporate the sewer improvements at the same time as was done below Nairobi Place. However, budget constraints with the Flood Control District precluded this work from being undertaken, and the City has elected to repair the damaged sewer and restore the bank where it is currently damaged at this time.

KEY ISSUES AND IMPACTS

Sanitary Sewer Improvement Projects

Prior to developing the current sewer rehabilitation plans for this area, staff considered various alternatives to correct the overflow problems. These alternatives included relocating sewer pipes away from the creek banks to the street right-of-way. This alternative was deemed not viable due to major elevation differences between the existing pipes and the street grades, as well as the need to relocate the private sewer laterals serving each house. The only viable option was to rehabilitate the existing sewer pipes in their present locations. The design of three separate projects that will rehabilitate and improve the condition of the aging sanitary sewer pipes in this area is complete. A location map for these projects is attached *(Attachment B).* Until these projects are constructed, inspection of pipes and structures in the problem areas is placed on a more frequent cycle by maintenance staff to ensure their proper operations and prevent further problems.

One project will rehabilitate sewer pipes along Chimes Creek. This is shown as Project No. 1 on *Attachment B.* This work will include replacing a portion of the pipe and bio-engineered slope stabilization. Staff has met twice with the affected residents about this project. The anticipated start of construction for this project is June 2006. This project required a City of Oakland Creek Protection Permit and other permits from the Department of Fish and Game and Regional Water Quality Control Board. The project will require the use of accepted best management practices to protect the creek ecosystem during construction.

Two additional sewer rehabilitation projects are slated for this area in the areas of Delmont Avenue/Oakdale Avenue and Delmont Avenue from Oakdale Avenue to Hillmont Drive. These are shown as Project Nos. 2 and 3 on *Attachment B.* Rehabilitation of sewer pipes in these areas will help reduce the infiltration and inflow of rainwater into the sanitary system and thus reduce wet-weather related sanitary overflows. The project in the Delmont Avenue/Oakdale Avenue will start construction soon. The other project will start construction this summer.

Opportunities for Long-term Bank Stabilization

Working with several neighborhood residents, City staff has also developed and put forward a scope of work for a feasibility study for mitigating the ongoing erosion problems. The preliminary scope of work has been provided to the residents for their review and comment. A copy of that scope of work is included as *Attachment C*. The purpose of the feasibility study would be to determine what alternatives might be available to address the long-term erosion problems along Chimes Creek. The study would consider options similar to the approach taken below Nairobi Place as well as other options including more natural bank stabilization methods, sometimes known as "bio-engineered" bank stabilization. The study would develop cost estimates for conceptual projects. However, no funding has been identified for this study. Notwithstanding any changes in the proposed scope of work, the estimated cost of this study is on the order of $100,000.00 or more.

SUSTAINABLE OPPORTUNITIES

Economic: Improving sanitary sewer infrastructure provides a positive economic opportunity for the community. The sewer improvement project contracts will require that 50% of the work hours be performed by Oakland residents, and 50% of all new hires be Oakland residents.

Environmental: The rehabilitation of sanitary sewers will eliminate sanitary sewer overflows and thus prevent harmful impacts to groundwater and the bay. Work in the creek area includes permitted best management practices to protect the creek ecosystem.

Social Equity: Eliminating sanitary sewer overflows benefits all Oakland residents.

DISABILITY AND SENIOR CITIZEN ACCESS

There is no direct impact or benefit to seniors or people with disabilities.

ACTION REQUESTED OF THE CITY COUNCIL

Staff requests acceptance of this report.

Respectfully submitted,

RAUL GODINEZ II, P.E.
Director, Public Works Agency

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Michael Neary, P.E.
Assistant Director, Public Works Agency
Design & Construction Services Department

Prepared by:
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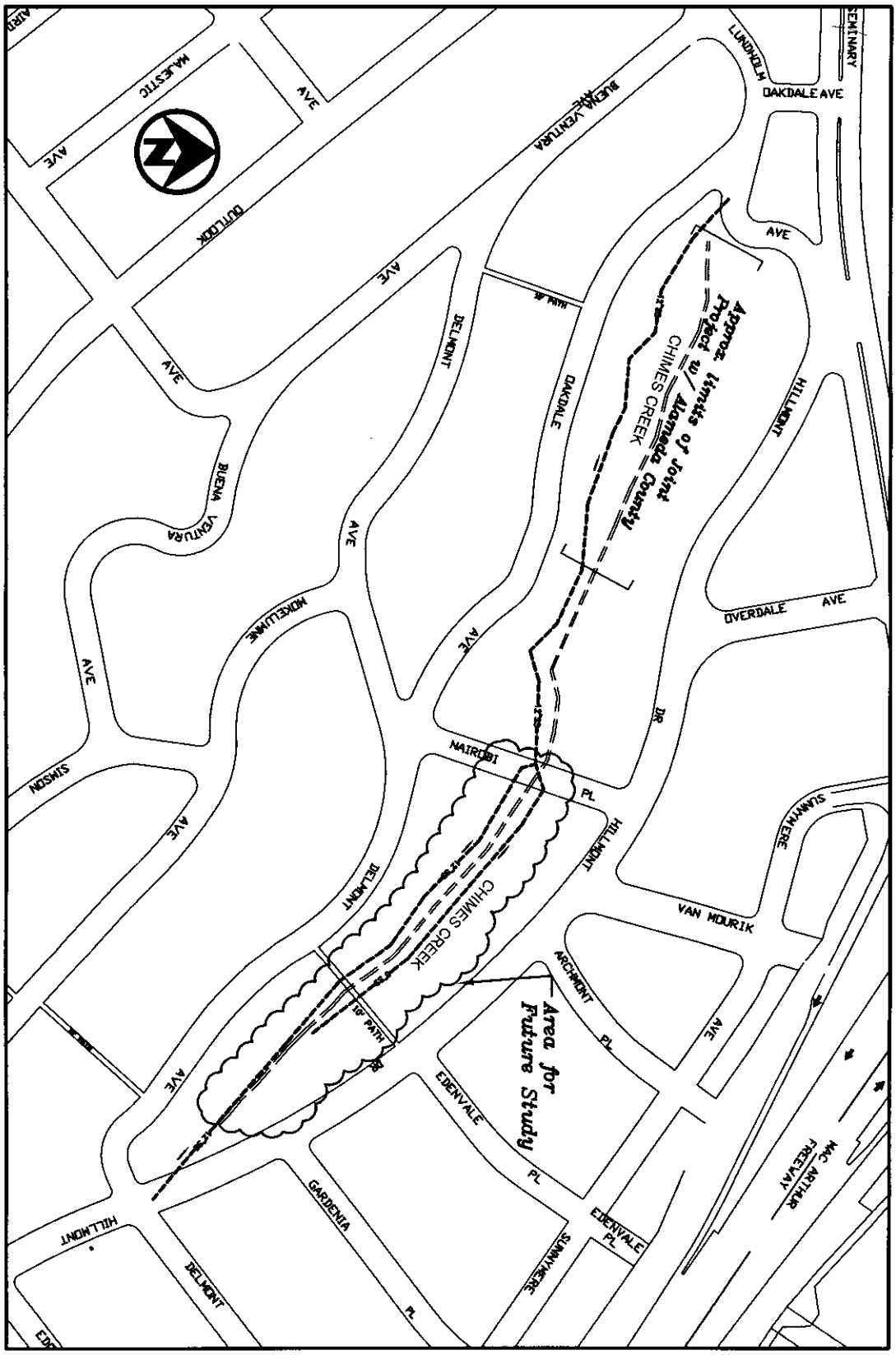
APPROVED AND FORWARDED TO THE
PUBLIC WORKS COMMITTEE:

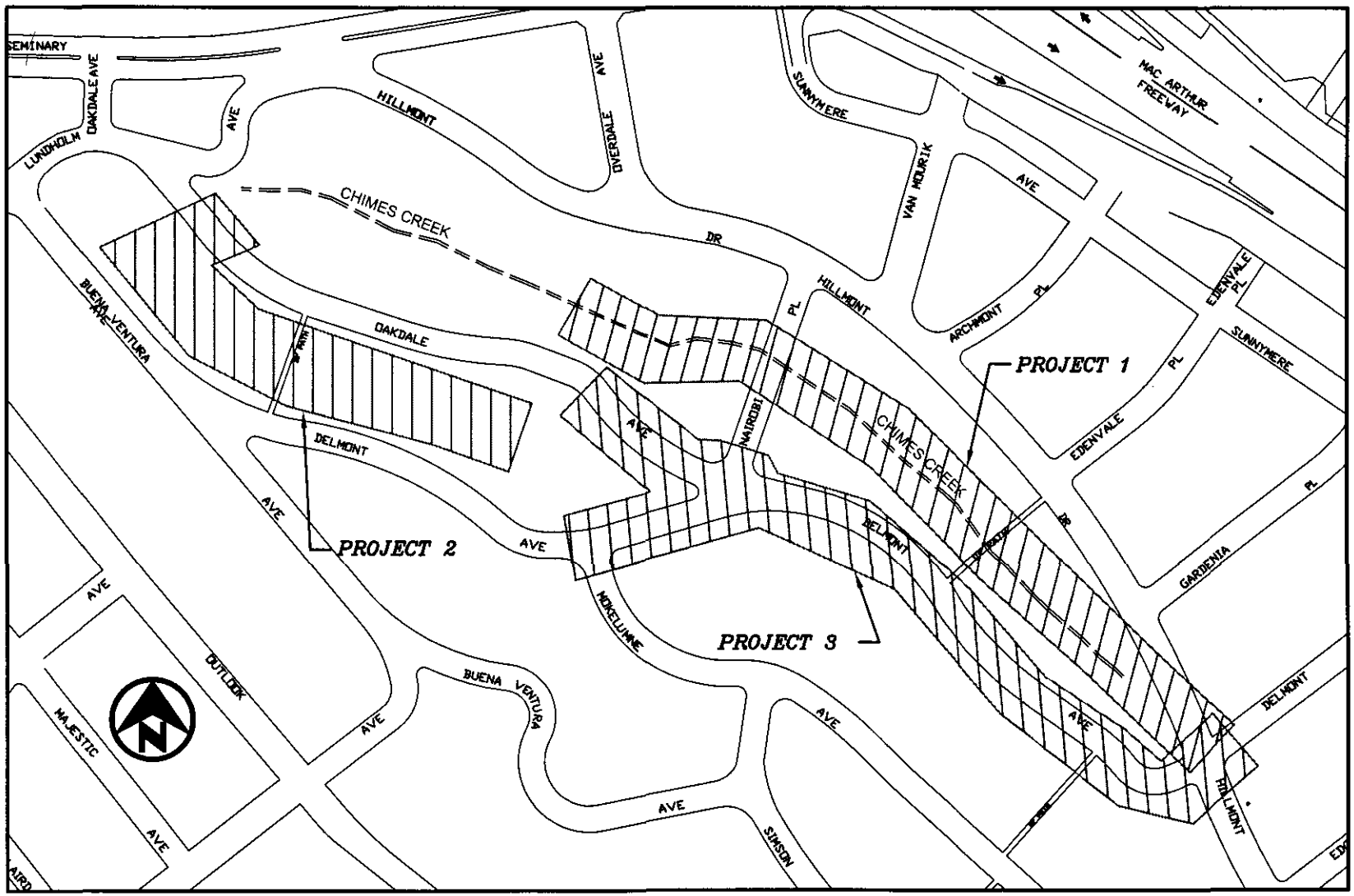
OFFICE OF THE CITY ADMINISTRATOR

Item: _____
Public Works Committee
March 28, 2006

ATTACHMENT A



ATTACHMENT B



LOCATION MAP

NOT TO SCALE

Attachment C

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Preliminary Work Scope Outline
Chimes Creek Restoration Feasibility Study

Objective:

The objective of this project is to complete a feasibility analysis for the restoration and rehabilitation of Chimes Creek below Interstate 580 in Oakland, California. For the purposes of this study, the limits of work will include Chimes Creek between the culvert outfall below Delmont Avenue and the existing culvert inlet near Nairobi Place.

The final product will include an analysis of existing conditions, alternatives to stabilization, and associated design, construction and project management costs, and a schedule for completion of all phases of project implementation. The study shall also address permitting requirements needed to complete the proposed work.

Background and Setting:

Chimes Creek is a natural, urban creek situated below the Interstate 580 Freeway in Oakland. The creek is surrounded on both sides by houses. In some locations, private property owners have constructed revetments such as small retaining walls and concrete inverts over the years. Public sanitary sewers are located within at least one bank, and in some locations both banks along the length of the study area.

Significant erosion occurred along Chimes Creek below Nairobi Place during the 1981-1982 El Niño winter and subsequent years. The Alameda County Flood Control District mitigated this erosion in a project in the early 1990's under which a bypass culvert was constructed in the creek bed and a reconstituted creek constructed on top. The banks in this area have been stable since, and the creek has been restored to a relatively natural condition.

Erosion upstream of Nairobi Place in the area to be studied in this report began to accelerate in the 1990's. The sanitary sewer pipe is exposed at several locations along this area.

Design Team:

The consultant team shall consist of a registered civil engineer and landscape architect with expertise in several key areas, including but not limited to the following:

- Hydrologic and hydraulic design of urban streams;
- Experience in similar stabilization projects for urban streams;
- An ability to conduct community meetings;
- Knowledge of bio-engineering techniques with a proven capability to stabilize banks in urban streams similar to Chimes Creek.

Scope of Work:

The following work tasks are considered the minimum necessary to complete this feasibility study. Consultants are expected to make recommendations to these tasks as they see necessary to complete the objectives of the feasibility study. It is expected that the alternatives considered will emphasize the restoration of Chimes Creek to a condition as natural as possible given its urban location. An emphasis on bio-engineered stabilization techniques should be considered wherever feasible and practicable.

1) Review Existing Conditions

    a) Compile and Review Available Information and Data, includes but not limited to:
        i) City of Oakland Records
        ii) Alameda County Flood Control District
        iii) Environmental Documents and supporting information for the Leona Quarry
    b) Review Existing Site Conditions
        i) Conduct Field survey
        ii) Review existing construction documents
        iii) Review existing hydrologic studies
        iv) Review existing hydraulic studies

2) Prepare Alternative Design Concepts

    a) Statement of Project Goals
    b) Summary of Available Information
    c) Summary of design limitations
        i) Include a summary of all design constraints to the proposed project, including permitting, physical constraints, legal constraints
    d) Proposed Design Standards
        i) Include a summary of the design standards to be used in the final design, including but not limited to hydrologic and hydraulic design standards; slope stability guidelines; setback standards
        ii) Design standards shall be presented to the City for approval prior to beginning actual feasibility level design work.
    e) Integration Requirements
    f) Data Gap Analysis
    g) Technical Feasibility Analysis
    h) Alternative Approaches for Final Project

3) Project Schedule

    a) Develop a project schedule for design, bid/award, and construction
    b) Develop a schedule for permitting required for the recommended alternative
        i) Includes Department of Fish and Game, Army Corps of Engineers, and any other permits necessary for the construction of the recommended alternative

4) Conduct Focused Surveys and Data Acquisition

   a) Conduct Focused Biological Survey
   b) Conduct Focused Hydrological Survey

5) Conduct Community Meetings

   a) The project is located in an urban setting, and proposed improvements will have a direct impact on the residents of the area.
   b) The consultant is expected to conduct community meetings at key points in the feasibility analysis to gather existing information, inform the community of alternatives considered, and to clearly explain the recommended alternatives.

6) Prepare Project Cost Estimate

   a) Estimate Concept Design Costs (Includes Study and Community Outreach)
   b) Estimate Construction Costs
   c) Estimate Project Management and Construction Management Costs

7) Alternative Task – Assist in Grant Applications

   a) The consultant may be required to assist the City in applying for grants for the design and construction of the recommended alternatives