

**AGENDA**  
**REGULAR MEETING DES MOINES CITY COUNCIL**  
**February 28, 2008 - 7:30 p.m.**

CALL TO ORDER - Mayor Sheckler

PLEDGE OF ALLEGIANCE

ROLL CALL

CORRESPONDENCE

COMMENTS FROM THE PUBLIC: At this time you are invited to comment on items that you wish to bring to Council's attention. Please sign in prior to the meeting and limit your comments to three minutes or less.

BOARD & COMMITTEE REPORTS

PRESIDING OFFICER'S REPORT

COUNCILMEMBER COMMENTS

ADMINISTRATION REPORTS

CONSENT CALENDAR\*

1. Motion is to approve the special and regular minutes of February 7, 2008.
2. Findings: Vouchers audited and certified by the auditing officer as required by RCW 42.24.080, and those expense reimbursement claims certified as required by RCW 42.24.090, have been recorded on a listing which has been made available to the City Council.

Motion: As of this date the Des Moines City Council, by unanimous vote, does approve for payment those vouchers and payroll transfers included in the above list and further described as follows:

Claim checks #113142 through #113366 & electronic fund transfers in the total amount of \$427,122.01

Payroll fund transfers in the total amount of \$327,232.77

3. Motion is to confirm Mayor Sheckler's appointments of Janet Sorby and Jean Munro to two year terms on the Human Services Advisory Board effective January 1, 2008.
4. Draft Resolution No. 08-015 Title: A Resolution of the City Council of the City of Des Moines, Washington, authorizing Stewardship Partners, a 501c3 non-profit organization, to conduct the Des Moines Waterfront Farmers Market at the Des Moines Marina and South Marina Park on Saturdays from June 7, 2008, until October 24, 2008, and listing conditions under which such permission is granted.

MOTION is to approve Draft Resolution No. 08-015, AND

Motion is to enter into an Agreement between the City of Des Moines and Stewardship Partners for the 2008 Des Moines Waterfront Farmers Market as proposed in Draft Resolution 08-015, and authorize the City Manager to sign the agreement substantially in the form as submitted.

5. Motion is to approve the Interlocal Agreement between the City of Normandy Park and the City of Des Moines for the provision of Senior Services in fiscal year 2008 whereby Normandy

Park will pay Des Moines for Senior Services in the amount of \$18,714 which represents the amount equal to Normandy Park's pro-rata share of costs for services based on 2007 participation levels and authorize the City Manager to sign the agreement substantially in the form as submitted.

6. Motion is to authorize the City Manager to sign the 2008-2009 CPG Grant No. G0800415 between the City of Des Moines and the Washington State Department of Ecology and the 2008-2009 King County Solid Waste Division WR/R Grant No. D36969D and to direct staff to work with Olympic Environmental Resources to prepare a contract for recycling services for future Council consideration.

7. Motion is to approve the revised Local Government Stormwater Grant No. G0800130 between the Washington State Department of Ecology and the City of Des Moines, and further to authorize the City Manager to sign the agreement substantially in the form as submitted.

8. Motion is to remand to the Finance & Economic Development Committee the economic development, planning and development and financing topics as identified on attachment 2.

9. Motion is to remand to the Public Safety & Transportation Committee the public safety and transportation topics as identified on attachment 2.

\*NOTE: Items on the Consent Calendar are either  
routine or have been previously discussed.  
Any item may be removed by a Councilmember.

## PUBLIC HEARING

### SEPA Appeal - Pacific Heights Planned Unit Development

SUMMARY: The purpose of this agenda item is to facilitate the Council's consideration of an appeal of the City SEPA Official's Mitigated Determination of Nonsignificance. The Council will receive testimony from the appellant and the City SEPA Official's designee. The Council will then be asked to resolve the appeal either by upholding the SEPA Official's decision or concurring the basis of the appeal. Council will be required to adopt Findings of Fact supporting their decision.

Staff Presentation: Land Use Planner II

## PUBLIC HEARING

### Draft Resolution No. 08-004 Pacific Heights Planned Unit Development Subdivision File #LUA06-037

SUMMARY: The purpose of this agenda item is to facilitate the Council's consideration of the preliminary PUD subdivision entitled "Pacific Heights. During the public hearing, the focus of Council's efforts will be to take public testimony regarding the project and to review the proposed PUD and determine if it is consistent with the terms of the "Settlement Agreement, Waiver and Release By and Between Granville Southern Corporation, Donald & Marie Tavis and the Cities of Des Mines and Federal Way", and either approve or deny any requested changes to the Illustrative Site Plan contained in Exhibit C of the Agreement.

Staff Presentation: Land Use Planner II



OLD BUSINESS

1. Draft Ordinance Nos. 07-138 Street Vacation & 07-202 Surplus of Public Property for Streets Located Within the Des Moines Creek Business Park Site: City File #LUA-07-025 - 2<sup>nd</sup> Readings

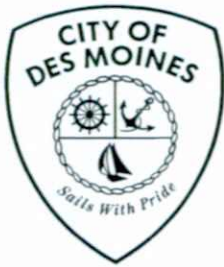
SUMMARY: The purpose of this agenda item is to provide Council with additional information and requested changes enabling it to perform a second reading and to take action on the draft ordinances. Together, the ordinances provide for the vacation and surplus of street segments within the Des Moines Creek Business Park as requested by the Port of Seattle.

Staff Presentation: Development Services Manager

NEW BUSINESS

NEXT MEETING DATE - Study Session March 6, 2008

ADJOURNMENT



# COMMENTS FROM THE PUBLIC - 3 Minutes or Less

## Sign Up Sheet for 2/28/08

PLEASE PRINT

| Name                 | Address                                    | SUBJECT MATTER                |
|----------------------|--------------------------------------------|-------------------------------|
| MICHAEL McANDREWS    | DES MOINES<br>1620 So. 260th St.           | Homing Pigeons                |
| RONDA BRYANT         | Renton<br>6220 SE 2nd Pl                   | " "                           |
| Valerie Tavenner     | 12030 SE 165th St<br>Renton                | " "                           |
| Carole Sue Braaten   | 2410 Berry Ln E<br>Fife, Wash              | Pigeons & Housing Development |
| Gayle Hipwell-Nelson | 16203 Canyon Rd E<br>Payson, UT            | Pigeons - Homing              |
| Kim Konopaski        | 1610 South 260th St<br>DES MOINES WA 98148 | Pigeons - Homing              |
| SHARON Blythe        | 10833 210 Ave S<br>SEALED                  | pigeons - homing              |
| Scott Vestal         | 1624 S. 260th St.                          | Pigeons                       |
| Trese Band           | 8607 308th Ave SE<br>Fall City             | "                             |
| DAVID BURGER         | 1411 - 4th Ave Ste 1425<br>SEATTLE, WA     | FARMERS MARKETS               |
| Rikki Marohl         | 22807 17th Ave S                           | Farmes Market                 |
|                      |                                            |                               |
|                      |                                            |                               |



## PUBLIC HEARING

### Draft Res. 08-004 Pacific Heights Planned Unit Development Subdivision

Sign Up Sheet

***SPEAKERS WILL BE CALLED IN ORDER***

**PLEASE PRINT**

| Name                  | Address                                   |
|-----------------------|-------------------------------------------|
| 1. Rich Coruwell      | 27925 13 Ave S.                           |
| 2. Louise Lutzinger   | 28009 - 13 <sup>th</sup> & S. Des Moines  |
| 3. Roberta Schaumburg | 28040 - 13TH Ave So Des Moines            |
| 4. Patricia Daniel    | 1313 S. 279 <sup>th</sup> St. Des Moines  |
| 5. CRAIG DAVIS        | 28234 15 <sup>th</sup> AVE S. Federal Way |
| 6. Ellen LeVITA       | 28234 15 <sup>th</sup> AVE S. Federal Way |
| 7. Cory MARTIN        | 6 MAPLE LANE MERCER ISLAND                |
| 8.                    |                                           |
| 9.                    |                                           |
| 10.                   |                                           |
| 11.                   |                                           |
| 12.                   |                                           |
| 13.                   |                                           |
| 14.                   |                                           |



**PRELIMINARY**  
**SPECIAL MEETING DES MOINES CITY COUNCIL**

MINUTES

February 7, 2008

The special meeting of the Des Moines City Council was called to order by Mayor Sheckler at 7:03 p.m. in the City Hall Conference Room, 21630 11<sup>th</sup> Avenue South, #A.

ROLL CALL - Present: Mayor Bob Sheckler, Mayor Pro Tem Scott Thomasson, Councilmembers Dave Kaplan, Ed Pina, Carmen Scott and Dan Sherman. Absent: Councilmember Susan White. Also in attendance were City Attorney Pat Bosmans, Assistant City Attorney Susan Mahoney, and Planning, Building and Public Works Director Grant Fredricks (Acting City Manager).

Mayor Sheckler announced the purpose of the special meeting is to hold an executive session to discuss with legal counsel representing the City litigation, or potential litigation to which the City is, or is likely to become a party, when public knowledge regarding the discussion is likely to result in an adverse legal or financial consequence to the City, and to discuss personnel matters. The Executive Session is expected to last approximately 30 minutes.

No formal action occurred.

ADJOURNMENT

The Executive Session adjourned at 7:27 p.m.

Respectfully submitted,

Pat Bosmans  
City Attorney

**PRELIMINARY**  
**REGULAR MEETING DES MOINES CITY COUNCIL**

MINUTES

February 7, 2008

The regular study session of the Des Moines City Council was called to order at 7:33 p.m. by Mayor Sheckler in the Council Chambers, 21630 11<sup>th</sup> Avenue South #B.

PLEDGE OF ALLEGIANCE to the Flag was led by Councilmember Pina.

ROLL CALL - Present: Mayor Bob Sheckler (left meeting at 9:18 p.m.), Mayor Pro Tem Dan Sherman, Councilmembers Dave Kaplan, Ed Pina, Carmen Scott, Scott Thomasson and Susan White (via telephone until 8:09 p.m.). Also in attendance were City Manager Tony Piasecki, City Attorney Pat Bosmans, Harbormaster Joe Dusenbury, Planning Manager Denise Lathrop and City Clerk Denis Staab.

COMMENTS FROM THE PUBLIC

Mary O. Haller, 22315 6<sup>th</sup> Avenue South #A401

Ms. Haller addressed Council on the subject of removing the sling launch from the Marina. She reported that Redondo is not an alternative as vehicles with boat trailers typically block the road, as there is not enough parking. She suggested Council reconsider removing the sling boat launch at the Marina.

Ron Hamilton, 26310 20<sup>th</sup> Avenue South

Mr. Hamilton informed Council he runs a marine repair facility in Kent and advised Council that a lot of his customers have told him they would be upset to lose the sling launch at the Marina. He reported that Redondo is already too crowded and the boat launch at that facility is dangerous. He requested the Marina sling launch stay and should be replaced with a better one.

Karen Alderman, 4502 Browns Point Blvd.

As a boat owner, Ms. Alderman stated there are not many places left to launch a boat and requested the sling launch stay at the Marina.

Dan Hamilton, 24423 Marine View Drive South

Mr. Hamilton informed Council he has used the sling launch at the Marina since 1974. He felt the Redondo launch is dangerous and he has seen numerous people injured, and the parking situation is totally inadequate. He expressed concern about losing the only safe launching place at the Marina when the winds pick up. He stated there has not been enough public notice regarding removal of the launch.

DISCUSSION ITEMS

Contract for Federal Government Lobbying Services

Mayor Sheckler introduced the subject.

**MOTION** was made by Mayor Sheckler, seconded by Councilmember Pina, to authorize the City Manager to sign the contract with Gordon Thomas Honeywell Governmental Affairs for 2008 Federal Government lobbying services retroactive to January 1, 2008, substantially in the form as submitted.

Mayor Pro Tem Sherman felt Council should agree on which of the 6 projects contained in Council's packet should be on the list for the 2009 Federal Funding requests, which may make a difference on whether we need the contract.

City Manager Piasecki advised Council that Mr. Learn has requested Council choose no more than two projects due to the tighter budget. He noted the top recommended projects by Mr. Learn are:

1. The Des Moines Creek Business Park Transportation Link Project for South 216<sup>th</sup> and 24<sup>th</sup> Avenue South, and
2. Downtown Des Moines Business District Water System Improvements

Councilmember Kaplan noted that the Public Safety and Transportation Committee had been informed that the Business Park Transportation Link Project was noted as a strong possibility for federal funding due to the economic development aspects of the project tied to the Port redevelopment and therefore, Committee members were generally in support of prioritizing this as one of the top two projects.

Councilmember Thomasson stated that Business Park Transportation Link would certainly be one of his top priorities, although he felt Council should discuss strategy about what we mean by that. He noted that the CIP has South 216<sup>th</sup> broken down into several phases all the way down to Marine View Drive. In regards to 24<sup>th</sup> Avenue South, he stated the City would expect land owners on each side of that street to do frontage improvements as they develop. Also there is some issue about what the City may or may not pay in proportion in terms of a wider street, etc. Also, whether we are talking with SeaTac about whether it is a consolidated application that takes it all the way to 200<sup>th</sup> or up to the Federal Jail. He questioned whether this is a Des Moines only project and only for our share of the costs, is it a Port and Des Moines application for that part of the street in Des Moines, or is it a Port, City of SeaTac and City of Des Moines application for the entire 24<sup>th</sup> Avenue project.

Councilmember Kaplan stated that due to numerous property owners along S. 216<sup>th</sup> and 24<sup>th</sup> Avenue South, the PS&T Committee talked about the possibility of leveraging a number of different things in order to make the projects happen. We will not know what each piece is going to cost until we get back the studies that were approved recently. Then we will have a better sense how to group things up and whether certain pieces should only be ours and not rely on the "Feds" because of different strings or requirements, but at the same time there may be things where we want to partner. For example if we can get initial Federal funding for pieces of the 24<sup>th</sup> Avenue stretch, depending on how that ties in with whatever funds we get from the developments happening in that area, may allow for leveraging an interchange with SR 509. He felt the problem is the studies are not done yet to be able to point to which piece of it will be phased first.

Planning, Building and Public Works Director Fredricks informed Council, staff is pretty confident that we will have developer generated funds and/or frontage improvements that will complete substantial segments of the various projects. He noted the segment of S 216<sup>th</sup> up through the intersection on SR 99 will be a difficult, expensive section as additional right-of-way will be required and there is no frontage improvements triggered by any of the development ideas for this, so this would be a segment of a project that might be a prime candidate to request Federal funding help on. He also noted that the studies that Councilmember Kaplan described



might suggest doing additional work on South 216<sup>th</sup> east to Military Road and how that would be paid for is unclear. Also the segment from the most western boundary of the Port property on S 216<sup>th</sup> down to 11<sup>th</sup> Avenue South is one that the City does not have identified funding support, and this could be a good candidate for Federal funding. He suggested with proper planning, these sections could be set up for multi year Federal Funding cycles to help with completion of S 216<sup>th</sup> from Military Road to Marine View Drive. He cautioned about applying for Federal funds if we have adequate local funding, due to the fact that Federal funds come with a set of Federal regulations, rules and approval authorities that would "federalize" a particular phase of work and may increase the costs.

In regards to the stretch of 24<sup>th</sup> Avenue South to S. 216<sup>th</sup> Councilmember Scott, noted that she believes the large 18 wheeler trucks are coming south on 24<sup>th</sup> and then east on S. 216<sup>th</sup>, which she is very unhappy about. She felt since the developing site is in the City of SeaTac, the trucks should head north to either get on SR 509 or I-5. She also noted that there is too much residential and shopping on South 216<sup>th</sup> and she felt it is important to work with SeaTac to keep the truck traffic going north.

Planning, Building and Public Works Director Fredricks advised Councilmember Scott that staff shares the same concerns. He noted staff has met with counterparts in the City of SeaTac and unfortunately S. 208<sup>th</sup> is not as high on their priority list as it is on ours. Staff is working with SeaTac to encourage that any traffic heading north ought to take the most direct route north, including 24<sup>th</sup> Avenue South to 208<sup>th</sup> and then the highway.

Mayor Pro Tem Sherman stated he is confident that the majority of Councilmembers are in agreement with the project priorities for funding. However, he noted he is very unhappy that we have to hire a lobbyist and pay him money to get money, unfortunately this appears to be the only way to get to our legislators. He noted in the past two years we have spent about \$180,000 to get about \$425,000. He advised he will support the motion for this year, but will keep a close eye on it to make sure we are getting a good return on the money we are putting out.

Councilmember Thomasson stated he is not convinced we will get a return for our money. He felt it is sad we have to hire somebody to speak to our legislators who should be ready to listen to us as a municipal government. He advised he is not in favor of using a lobbyist. While he felt the water system improvements are critical for development of downtown, it bothers him that we will spend City money to go lobby for money for Water District #54, when they will not spend their own money to lobby.

Mayor Sheckler acknowledged Councilmember Thomasson's concern about Water District #54, but felt it is obvious they are not going to do it and because the outcome is so beneficial to the City as a whole, is why he will support this project.

VOTE ON MOTION: Motion passed 5 to 2 with Councilmembers Kaplan and Thomasson opposed.

8:09 p.m. Councilmember White discontinued participation via telephone.

MOTION was made by Mayor Pro Tem Sherman, seconded by Mayor Sheckler, that the City prepare requests for 2009 Federal Funding for the following projects:

- Downtown Des Moines Business District Water System Improvements

- Des Moines Creek Business Park Transportation Link Project for South 216<sup>th</sup> and 24<sup>th</sup> Avenue South
- and if one of those two is not able to move forward add:
- Restoring Des Moines Creek Basin through Beach Park to Reduce Flooding and Promote Fish Habitat

Councilmember Thomasson commented he would rather have the Business Park Transportation Link first and the Water System Improvements second.

Councilmember Pina stated he prefers the order as noted and should we get funds for Water System Improvements the City should do the work and not give the funds to the Water District.

Mayor Pro Tem Sherman noted he thought the City had an agreement with the City of SeaTac that all the large trucks would go north on 24<sup>th</sup> Avenue South. He noted he is not happy with the situation and felt any improvements that are needed to 24<sup>th</sup> Avenue South should be paid for by the firm that has purchased and is developing the former Church property and they should be paying traffic impact fees to widen South 216<sup>th</sup>.

Councilmember Pina suggested making 24<sup>th</sup> Avenue South a one-way street north bound.

City Manager Piasecki advised that staff will work with the lobbyist to put together what in his mind is the best request, but he will send Council drafts and requested that each Councilmember respond to him individually with any comments or concerns.

VOTE ON MOTION: Motion passed unanimously 6 to 0.

Draft Ordinance No. 07-201 8<sup>th</sup> Avenue South Access Restrictions - Reconsideration

**MOTION**, pursuant to Council Rule 28, was made by Councilmember Scott, seconded by Mayor Pro Tem Sherman, to reconsider the action taken at the January 24, 2008 Council meeting to remand Draft Ordinance No. 07-201 to the Public Safety and Transportation Committee for recommendations.

Councilmember Scott stated that she understands that if this motion passes that this matter will be returned to the table anew at the next regular Council meeting for any action the Council deems advisable. She felt by Council not taking action on the ordinance, but by strongly encouraging staff to take the draft ordinance into account Council is leaving staff in a situation where they are being asked to defend a stance that Council did not act on. She stated it is not appropriate to put staff in that position, as Council needs to take a concrete action that staff can tell someone yes, no or why. She further noted this is a small part of a larger problem with transportation, traffic and parking. She also noted after speaking with a couple of individuals on this Council Committee, she did not feel this item would become a priority.

Councilmember Pina felt the purpose of sending this item to Committee was so that they would look at all of the alternatives and make a recommendation to the whole Council. In the interim, staff has to work under the rules as they now exist. He felt this draft ordinance needs to be studied in detail.

Mayor Sheckler advised he will probably support the motion and see what happens during reconsideration to see if Council's direction is more palatable.



Councilmember Pina noted he will be out of town on February 14<sup>th</sup> and he is very interested in this subject.

City Manager Piasecki noted the item could be continued at the February 14<sup>th</sup> meeting to February 28<sup>th</sup>. Mayor Sheckler advised he cannot guarantee this will be Council's direction, but acknowledged another week would not hurt.

Councilmember Thomasson noted the action taken next week will be to consider taking this item back from the Committee and should Council choose that course, it does not mean Council must take action on the draft ordinance that same night.

VOTE ON MOTION: Motion passed 4 to 2 with Councilmembers Kaplan and Pina opposed.

Agreement - Design, Engineering & Permitting Marina Bulkhead Replacement Project

Harbormaster Dusenbury noted staff is requesting authorization to enter into an agreement with Moffatt & Nichol to design, engineer and obtain permits for the Bulkhead Replacement Project. He noted staff is recommending that we include the design of the 2<sup>nd</sup> phase of the bulkhead replacement. The advantage would be a minor cost savings, but the design and permitting would be in place so when the funding is available it would be ready to go, since permitting is the major stumbling block. The only risk would be if we were not able to complete it within a five or six year period, we may be required to go back and do some of the permitting over again. He stated after discussing this with the Municipal Facilities Committee and the Finance Director, he is comfortable that we can get the project done in the next 5 to 6 years in terms of our financial capacity to go out and get another bond issue, if necessary. He noted the combined projects of:

- 12.5 Kv Power Line Relocation
- Bulkhead Replacement - A
- Bulkhead Replacement - B
- Travel Lift Pier Replacement

amounts to a total of \$7,797,793. He continued by reviewing the breakdown costs for design, engineering and State and Federal Permits equaling the total budget. He continued by reviewing the scope of work listed in Council's packet and concluded by reviewing the Consultant's Budget and contingency amounts also contained in Council's packet.

**MOTION** was made by Mayor Pro Tem Sherman, seconded by Councilmember Kaplan, that Council approve the agreement with Moffatt and Nichol for design, engineering and permitting services for the Bulkhead Replacement Projects A and B, the 12.5 Kv Power Line Relocation and the Travel Lift Pier Replacement in the amount of \$607,514, plus a contingency of \$55,600 and authorize the City Manager to sign the agreement substantially in the form as submitted.

Mayor Pro Tem Sherman referenced earlier comments from the public, noting that the sling launch has been losing money, around \$20 to \$25 thousand per year, for quite a period of time. He also noted it will need to be replaced in the next few years at a cost of around \$500,000, meaning we would need to increase launch fees to around \$40. He further noted keeping the launch where it is would be contrary to the Marina Master Plan which forecasts the development of a restaurant in that area and the two would be incompatible. He stated we need to move forward with the bulkhead replacement.



Councilmember Thomasson referenced the Marina Master Plan which included the sling launch going away and adding a commercial space somewhere in the north end which could include a Marine Hardware Store, or an expanded boat yard, among other things. He felt we need to take a closer look and study the potentials, especially the concept of a marine hardware store or expanded boat yard. He also expressed some concern about spending money we have to do the design and get the permits, since we do not yet know if we can fund it to actually build something. He advised he is not willing to spend money on a design when we have not figured out how to pay for it. He stated he first needs to know where the \$8 million is coming from and that we could indeed get the loans and pay them back. He suggested we do the permitting first and then do a contract for the design.

Harbormaster Dusenbury informed Council that we cannot do the permitting without a design. He advised that Phase B is about a \$130,000 for the design effort, and \$40,000 of that is permitting and environmental work. In regards to the total \$7.8 million, upon consulting with the Finance Director, he stated between the money currently in the bank (the first Bond issue) and a second bond issue, we have enough money to proceed. Whether we have enough money to do Phase A and B remains to be seen and the only way to know is to go out to bid and get the numbers back. As to whether we can get another Bond issue in the next five years to finish what is left to be done, he felt if everything remains the same we should be able to do that. In regards to the boat yard, he noted they are still very interested in expanding and very interested in getting the travel lift trailer replaced. He stated it was his hope to get the travel lift trailer pier replaced as part of the first construction phase. He spoke against doing nothing as construction costs are escalating rapidly.

City Manager Piasecki pointed out that by combining A and B there is an economy of scale achieved for doing it all at once. However, if you do each replacement as a stand alone project we will end up paying more than if it is combined.

Councilmember Thomasson commented that part of him has no problem with full steam ahead, but what he has not heard is that all the pieces that go with this are ready, as we have not taken action to bring it all together.

Councilmember Scott noted that she and Councilmember Thomasson have spent a lot of time trying to figure out how to save the sling launch, to no avail. In regards to a commercial tenant at the north end, she felt a great deal has been learned while working with Anthony's about what a tenant may need to be given or expect to have the City willing to do. She felt since Anthony's has backed away, we have an opportunity to rethink how much land, what kind of use and perhaps look for proposals to see what is available and evaluate the various opportunities. She noted through the rebuilding of the bulkhead as a requirement of the permit, we must provide more "water", and the ideal spot to add more water is where the old sling launch is. She concluded by stating she feels we are moving in the right direction.

Harbormaster Dusenbury reminded Council that the worse area or condition of the bulkhead is on the north pier near the landside of the fishing pier. The next worse area is under the sling launch deck. He emphasized the worst risk is a seismic event with this type of a bulkhead. He added that our engineers have told us the risk of failure is greatest between the Marina office and the boatyard and the next area would be the Marina office to the north. Therefore the north side is less risk because we would lose some parking lot, but with a failure in front of the Marina

office we could lose the office and the boatyard. He felt A (Marina office and north) and B (Marina office and south) are the logical places to start in terms of risk.

Councilmember Pina suggested that through this summer the price for using the sling launch be raised to \$50.00 which will provide a good basis on whether to keep it or not. If this is the fee required to keep a launch and people do not want to pay it, then Council has a clear answer as whether to get rid of it.

Mayor Sheckler stated he felt a \$50.00 fee would completely drive business away.

Councilmember Thomasson expressed support in trying out the higher fee.

Harbormaster Dusenbury noted the price of the sling launch has not changed, but the use has continuously gone down and he feels this is strongly related to how many fish are still out there and how many people are still into salmon fishing. He stated the number of fishermen and licenses issued is going down every year.

Mayor Pro Tem Sherman commented that if we pass this item tonight, we are not committing to doing A or B first. We will be looking at both of them. If we determine 2009 will be construction time then we will determine whether A or B goes first. In the meantime, increasing the launch rate will be okay with him. He further noted that in order to pay off bonds, additional income will be needed, which is what the restaurant was to do.

Councilmember Thomasson expressed the hope that within the next month Council will start taking action on the things that need to happen behind the bulkhead. He felt Council needs to deal with the boatyard, evicting a restaurant out of an existing lease, and ask for proposals for a new restaurant lease on the north end. He noted while tonight's proposal is good, we do not have a total plan on paper in terms of all the things Council needs to do.

City Manager Piasecki reported staff will be meeting with the Municipal Facilities Committee and we will be talking about issuing an RFP for the restaurant area, getting staff going on the revised lease for the boatyard and look at doing something with the marine hardware proposal. But the time is now and within the next month we must have things moving, starting with the restaurant.

Councilmember Kaplan noted Council has been working on the Master plan for years and feels it is time to stop talking and start doing. He strongly support tonight's contract.

VOTE ON MOTION: Motion passed unanimously 6 to 0.

9:18 p.m. Mayor Sheckler called for a 10 minute break. At this point Mayor Sheckler left the Council meeting and Mayor Pro Tem Sherman took over as presiding officer.

#### Midway Subarea Planning

Planning Manager Lathrop informed Council that the City of Kent, in partnership with Des Moines, was selected by the Washington Department of Community Trade and Economic Development (CTED) to receive a \$125,000 Competitive Growth Management Act Planning Grant for the Midway-Pacific Ridge planning project. She advised that the focus of the grant application was guided in part by Des Moines' goals to reconcile inconsistent land use patterns

and development standards in the Midway area, facilitate a dialogue with the public and elected officials about choices related to future transit station locations and light rail alignment in the Midway/Pacific Ridge areas, and evaluate growth potential for the future. The Grant will run from January 2008 to June 2009. She noted the following project goals identified by staff in preparing the Grant:

- Reconcile inconsistent land use patterns and development standards
- Facilitate a dialogue about future high capacity transportation improvements in the SR 99 corridor
- Evaluate growth/Redevelopment potential
- Employee new technology to engage the community

The process to be followed was identified as:

- Establish an Interlocal Agreement
- Define Mission, Goals and Study Area - meeting with Council's Finance & Economic Development Committee next week
- Establish Stakeholder Committee, including a Des Moines City Councilmember volunteer
- Create Virtual Reality Public Visioning
- Develop and Analyze Land Use Alternatives
- Select Preferred Alternative
- Identify Areas for Planned Action Ordinance

Community outreach will be achieved by:

- Stakeholder Committee (includes Kent, Des Moines, Port of Seattle, SeaTac, Federal Way & Highline Community College; plus King County METRO, Sound Transit, WSDOT & Puget Sound Regional Council)
- Public Workshops/Hearings to begin in June, July and one in October (paid by the Grant)
- Social Network via a joint website providing for public input
- Use of Virtual Reality

Expected outcome includes:

- Revitalize Commercial and Residential Uses
- Support Transportation Corridor
- Streamline Development Process
- Create New Development Regulations

She concluded by requesting a Council representative to serve on the stakeholder committee as well as participation in the community workshops and open houses. She presented a brief CommunityViz demonstration to give Councilmembers an idea of how the virtual reality tool can be used.

Councilmember Thomasson advised the project objectives as listed in Council's packet, page 2, have never been discussed by Council, and he is not sure he supports them because they are written as though a decision has already been made, rather than feasible, potential or desired. He felt Council as a whole should determine what the goals and outcomes of the study should be and to help shape it so when staff is presenting conversations to the public, staff will not point the public to where Council does not want to be.

Planning Manager Lathrop stated it may have been a poor choice of words on her part.



City Manager Piasecki pointed out that in the agenda item itself, while it says the following project objectives were developed as part of the Grant application, we also envision that these can certainly change as we go through the visioning process. However, to get the process started, we had to put together some sort of thought for the State as to what sort of things may come out of this. He felt Planning Manager Lathrop is on track with the idea of bringing everyone together and figure out what we do want and what we expect.

Councilmember Thomasson felt staff needs to engage all of Council, not just the Economic Development Committee, or just one Councilmember. He suggested Council be engaged and have some preliminary concepts before staff goes to the public to ensure the issues are understood.

Councilmember Kaplan referenced the draft boundary of the area and expressed surprise that it did not extend to a main arterial such as S. 260<sup>th</sup> or 272<sup>nd</sup>. He noted the only area of the City that has commercial potential that Council has not discussed is the stretch south of the Kent-Des Moines Road down to S. 272<sup>nd</sup> and he sees this an opportunity to get a sense of what types of things people would want to see and may provide guidance in terms of what we would or would not allow. He noted there are things beginning to happen with properties that may not fall into this boundary that are impacting our City that may require changes in permitted uses. He felt if this is a step towards being able to have a discussion on these issues then he welcomes it. He noted in the end we may find our needs are different from Kent's due to the limited amount of commercial space that Des Moines has. However, he noted, there may be areas or items where we can coordinate as it will be to the benefit of both jurisdictions. He pointed out nothing is going to happen unless Council makes it happen.

Councilmember Thomasson stated he is in favor of doing the planning, but gets worried when we call citizen groups together to do the planning for us. He noted he does not want staff to spend months with a committee "going to the left", when Council may want to "go to the right". He requested staff be cautious in talking with citizens so that they don't start talking with the objectives as written in the Council packet.

Planning Manager Lathrop advised while the Finance & Economic Development Committee will participate in the first meeting, her plan is to have regular briefings to that Committee as well as full Council briefings throughout the course of the project.

Mayor Pro Tem Sherman restated the goal is to develop zoning and development regulations that are consistent along the "zipper" boundary, between Kent and Des Moines, and this will require the entire Council's attention. He cautioned staff not to get "too far ahead" of the Council if they wish Council to approve new zoning or development regulations. He questioned why the cities of Federal Way and SeaTac, and Puget Sound Regional Council and the Port would be involved in what our development regulations should be.

Planning Manager Lathrop pointed that SeaTac will have light rail coming down the S 24<sup>th</sup>/28<sup>th</sup> corridor which involves Des Moines' and Kent's preferred routes. Other agencies are also involved in similar ways.

Discussion concluded with Councilmember Thomasson volunteering to serve on the Stakeholder Committee.

### Zoning Code Update

Planning Manager Lathrop reminded Council that at the September 6, 2007, review was completed of Chapter 18.04 and deferred Chapter 18.08 until most of the rest of the Code is complete. She noted tonight's discussion will center around current Chapter 18.94 the Hearing Examiner Code, 18.84 the Comprehensive Plan and Chapter 18.60 Amendments, Unclassified Use Permits, PUDs and Appeals. She called Council's attention to the color coded Attachment 2 in Council's packets which shows how the sections are being moved or reorganized into the new format. She noted a new Chapter has been added, 18.28 Development Agreements, which has yet to be written. She advised that tonight's packet has very minimal text changes, it is mostly splitting up some sections.

Planning Manager Lathrop noted what is currently Chapter 18.94 has been reorganized so that it is now part of Chapter 18.16, the Hearing Examiner Code as well as part of Chapter 18.12 (Land Use Review Procedures) and Division 4, which staff will bring later, is the Land Development. She pointed out that sections 18.94.150 through .190 are being put into part of the Land Use Review Procedures.

Councilmember Thomasson stated he is okay with taking the Land Use Review Procedures out, but questioned why do we leave the Hearing Examiner in the Development Code, since the Hearing Examiner has been given a lot of other duties. He felt it might be best to put the Hearing Examiner Code next to Municipal Court under Administration and Personnel, or perhaps under Council and Appointive Committees, because it is more than Land Use. He further suggested not leaving the purpose title section static, but update it to whatever it is we are doing.

City Manager Piasecki reminded Council that staff's firm direction was to take the current Code as it is and put it into the new format. He noted the issue raised by Councilmember Thomasson is an excellent one, but questioned if this is the appropriate time to get into that issue. He pointed out that when it comes time to finish the new ordinance that creates all this, we will pick this up, move it to some other part of the Code and then update it so it reflects all of the other duties we have given the Hearing Examiner. The goal now is Zoning Code Land Use things and we will deal with the detail later.

Councilmember Thomasson felt the matters to be heard by the Hearing Examiner needs some work and make sure the list is complete based on everything we have done up to this date (18.16.130).

Planning Manager Lathrop noted that 18.84 (Comprehensive Plan) has been put into the new Chapter 18.20 and changing the title to include the word 'Updates'. She noted there are going to need to be some text amendments once we have reorganized.

Upon questioning by Councilmember Thomasson, Planning Manager Lathrop assured Council that the Comprehensive Plan will be updated to include the changes adopted in 2007.

10:27 p.m. **MOTION** was made by Councilmember Kaplan, seconded by Councilmember Scott, and passed unanimously, to extend the meeting to 10:45 p.m.

Councilmember Thomasson also voiced objection to the term of Update, and Mayor Pro Tem Sherman felt this was unanimous.

Planning Manager Lathrop noted that Chapter 18.24 is being split into two different chapters, with 18.60 being moved to 18.24 (Amendments & Area Wide Rezones) and 18.160 (Conditional and Unclassified Use). Upon questioning, she noted Planned Unit Developments went to 18.132.

Councilmember Thomasson asked the policy question concerning expiration of a permit if the applicant never takes any action.

City Manager Piasecki noted expiration time will go into 18.160 under Conditional and Unclassified Uses.

Councilmember Thomasson noted that area wide rezones would not have a time limit, but the language still refers to spot rezones that did have a time limit. He understands that Council does not have the authority to place time limits anymore.

City Manager Piasecki informed Council staff is tracking changes which are needed within two areas of 1) Need to Change versus, 2) Policy Changes.

Planning Manager Lathrop informed Council for the next meeting scheduled for the study session in March discussion will be on Division 3 section Environment which includes Critical Areas Ordinance, Shoreline Master Program, State Environmental Policy Act, Commute Trip Reduction Plan and Green Building Standards.

#### NEXT MEETING DATE

Mayor Pro Tem Sherman noted the next regular meeting will be February 14, 2008.

#### ADJOURNMENT

At 10:39 p.m. **MOTION** was made by Councilmember Kaplan, seconded by Councilmember Pina and passed unanimously, to adjourn.

Respectfully submitted,

Denis Staab  
City Clerk



## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Mayor's Appointments to the Human  
Services Advisory Board

FOR AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Legislative

DATE SUBMITTED: February 7, 2008

ATTACHMENTS:

1. Human Services Applications

CLEARANCES:

☐

☐

APPROVED BY CITY MANAGER

FOR SUBMITTAL:

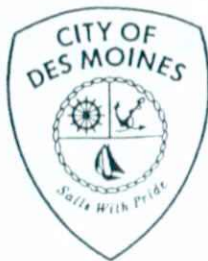
### RECOMMENDED ACTION

It is recommended that Council approve the following motion on the Consent Calendar:

"Motion is to confirm Mayor Sheckler's appointments of Janet Sorby and Jean Munro to two year terms on the Human Services Advisory Board effective January 1, 2008."

### SUMMARY STATEMENT

Currently two vacancies exist on the Human Services Advisory Board. The Board members and the Senior Services Manager have been actively seeking qualified candidates and recommend the appointments of the above as individuals who will bring valued interest to the Board.



CITY OF DES MOINES  
APPLICATION FOR APPOINTEE OFFICE  
21630 11th Avenue South  
Des Moines, WA 98198

Recvd. 1-28-08

Please Check

NAME: Janet Sorby  
ADDRESS: 27201-8th Ave So  
CITY, ZIP: Des Moines WA  
PHONE: Home 253-941-0811 Work 253-653-7523  
LENGTH OF RESIDENCE AT THE ABOVE ADDRESS 9 yrs  
REGISTERED VOTER? Yes  
EMPLOYMENT SUMMARY LAST FIVE YEARS:

- ☐ Civil Service Commission  
☒ Planning Agency  
☒ Library Board  
☒ Human Services  
☐ Senior Services

Seattle Public Schools - Teacher for young adults with  
serious behavior problems at West Seattle High School

Are you related to anyone presently employed by the City of a member of a City Board? No  
If yes, explain: \_\_\_\_\_

Do you currently have an owning interest in either real property (other than your primary residence or a business) in the Des Moines planning area? No If so, please describe: \_\_\_\_\_

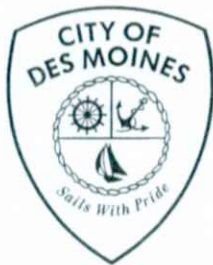
IN ORDER FOR THE APPOINTING AUTHORITY TO FULLY EVALUATE YOUR QUALIFICATIONS FOR THIS POSITION, PLEASE ANSWER THE FOLLOWING QUESTIONS USING A SEPARATE PAPER IF NECESSARY.

1. Why do you wish to serve in this capacity and what can you contribute? I have recently retired from teaching and I am looking for a way to share my expertise and energy in my community. I was a King County teacher of the year; served on the state vocational board; was on the committee of incorporation for the City of Kenmore; as well as many other volunteer experiences.
2. What problems, programs or improvements are you most interest in? I am interested in human services, art in the community, library services and serving any where I may be needed!
- Thank you.

3. Please list any Des Moines elective/appointive offices you have run/applied for previously. \_\_\_\_\_

email address: e.sorby@comcast.net





**CITY OF DES MOINES  
APPLICATION FOR APPOINTEE OFFICE**

21630 11th Avenue South  
Des Moines, WA 98198

Recvd. \_\_\_\_\_

Please Check

NAME: Jean M. Munro

ADDRESS: 21925 7<sup>th</sup> Ave. S. Condo unit #123

CITY, ZIP: Des Moines, WA 98198

PHONE: Home 206.824.9112 Work 206.878.3710 X 3365

LENGTH OF RESIDENCE AT THE ABOVE ADDRESS 1983

Email ADDRESS: jmunro10@comcast.net

REGISTERED VOTER? yes

EMPLOYMENT SUMMARY LAST FIVE YEARS: Highline Community College Department: Women's Programs & WorkFirst Services June 2007- current date: position: Co-Interim Director. 2000 – 2001 – program assistant. 2001-2006 WorkFirst Advisor/coordinator

- ☐ Civil Service Commission  
☐ Planning Agency  
☐ Library Board  
☒ Human Services  
☐ Senior Services

Are you related to anyone presently employed by the City or a member of a City Board? No  
If yes, explain: \_\_\_\_\_

Do you currently have an owning interest in either real property (other than your primary residence or a business) in the Des Moines planning area? YES If so, please describe: Condominium Spyglass/ one unit.

IN ORDER FOR THE APPOINTING AUTHORITY TO FULLY EVALUATE YOUR QUALIFICATIONS FOR THIS POSITION, PLEASE ANSWER THE FOLLOWING QUESTIONS USING A SEPARATE PAPER IF NECESSARY.

1. Why do you wish to serve in this capacity and what can you contribute? I have been a Des Moines resident since 1983 and have always had an interest in serving my community. I worked very hard to put myself through college without loans or any financial assistance. I had to work 2 jobs to pay for tuition and book costs. Because of my 2 jobs, and attending evening college I had no extra time to serve on boards in my community. I did however serve the Des Moines Community members and surrounding communities through my work at Highline Community College. Our department serves students that are traditionally underserved and that need community based organizations to keep them in college and emergency assistance to pay rent, for childcare and electric bills to name a few. Des Moines food bank and other agencies have assisted HCC students and the college continues to partner with Des Moines and we could not be more appreciative.

2. What problems, programs or improvements are you most interest in? I am interested in the well being of our Des Moines residents and would like to offer provide services to Des Moines residents that Highline College can provide. I also interested in providing our parents with more programs for their students involving the arts, music and theater/dance. Other areas of interest include sustainable living, encouraging our youth and young adults to embrace our senior residents and maybe some new programs bridging the two groups.

3. Please list any Des Moines elective/appointive offices you have run/applied for previously.  
N/A



## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Des Moines Waterfront Farmers  
Market

FOR AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Parks & Recreation

DATE SUBMITTED: February 18, 2008

ATTACHMENTS:

1. Draft Resolution No. 08-015, and
2. Draft Agreement between the  
City of Des Moines and  
Stewardship Partners

CLEARANCES:

[X] Park & Recreation   
[X] Marina   
[X] Legal 

APPROVED BY CITY MANAGER

FOR SUBMITTAL: 

### PURPOSE AND RECOMMENDATION

#### Purpose and Recommendation

The purpose of this agenda item is to present and recommend a proposed Resolution and Agreement with Stewardship Partners a 501c3 non profit organization to partner with the City of Des Moines related to the Des Moines Waterfront Farmers Market. The 2008 Farmers Market would again be located at South Marina Park, open to the public on Saturdays between June 7 and October 25, 2008 and operate between the hours of 10:00 a.m. to 2:00 p.m.

**FIRST MOTION:** "I move to adopt Draft Resolution No. 08-015, authorizing the Des Moines Waterfront Farmers Market between June 7, 2008 and October 25, 2008 at the Des Moines Marina, and to direct the City Manager to provide support services and amenities for the event as proposed in Draft Resolution No. 08-015."

**2ND MOTION:** "I move to enter into an Agreement between the City of Des Moines and Stewardship Partners for the 2008 Des Moines Waterfront Farmers Market as proposed in Draft Resolution 08-015, and to authorize the City Manager to sign the Agreement substantially in the form as attached."

### **Background**

The City of Des Moines partnered with Farming & the Environment (F&E) in 2006 to bring a “first of its kind” stewardship farmers market to the Des Moines waterfront. The stewardship farming movement is focused on providing all Washington citizens a safe and nutritious food supply grown in a manner that protects health and the environment while adding economic and social value to rural and urban communities. In January 2008, Farming & the Environment’s Board of Directors made the decision to focus its efforts back to its primary mission of farm stewardship and education. At the request of Farming and The Environment’s Board of Directors, Stewardship Partners, a 501 (c)(3) non-profit organization which helps private landowners restore and preserve the natural landscapes of Washington State, agreed to serve as a one-year transition sponsor of the 2008 Des Moines Farmers Market. However, the agreement between the two entities will conclude in one year and requires that the City of Des Moines or another approved entity would assume Market responsibility if the Des Moines Waterfront Market is to continue in the future.

### **Discussion**

The vision of the Des Moines Waterfront Farmers Market is to benefit the community by providing a consistent variety of produce and crafts by local farmers and vendors promoting a vibrant, education and inviting atmosphere. The mission is to enhance the Des Moines waterfront community by providing locally grown and affordable produce and crafts while fostering a sense of community through education and diversity.

The 2008 Des Moines Waterfront Farmers Market is sponsored by Stewardship Partners with on-site market management. The Farmers Market leadership team includes: Stewardship Partners Executive Director David Burger, on-site market manager Rikki Marohl and assistant market manager Debra Jackson.

Previous Farmers Market sponsors Farming & the Environment engaged the community in 2005 by establishing a Steering Committee made up of Des Moines citizens, business owners, Washington farmers and local vendors to clarify the new Farmers Market’s administrative roles and responsibilities, code, insurance and infrastructure issues, program logistics and marketing and outreach. This Committee continues to provide the core volunteer support for the 2008 market season. Numerous market volunteers who include vendors, farmers, Des Moines citizens and business owners have committed to support the 2008 market.

The Parks & Recreation and Marina Departments staffs will assist the Des Moines Waterfront Farmers Market with site logistics, special events coordination and communications support as identified in the Agreement. The City of Des Moines Arts Commission has events planned on opening day of the 2008 Farmers Market to include: the dedication of the “Spirit of Des Moines” mural and Waterland Children’s Arts Festival.

### **Alternatives**

None Provided.

### **Financial Impact**

The Des Moines Waterfront Farmers Market is funded through fundraising and market fees managed by Stewardship Partners. Stewardship Partners requests that the City of Des Moines allow use of the South Marina Park and Parking lot on Saturdays between 8:00 a.m. and 4:00 p.m. from June 7th through October 25, 2008 in exchange for the benefits of having a farmers market located in Des Moines. Staff anticipates minimal City support would be required in 2008 for items such as: South Marina Park site set up and utility connections and coordination of community special events and communications as identified in the Agreement in an amount not to exceed \$2,500.

### **Recommendation/Conclusion**

Staff supports the continued use of the South Marina Park and its parking lot for the Des Moines Waterfront Farmers Market due to the following program benefits to Des Moines:

- The Market draws people to Des Moines downtown and promotes Des Moines Waterfront as a destination;
- The Market improves Des Moines' quality of life and healthy lifestyles by providing farm fresh produce and a community gathering place for positive citizen interaction;
- The Market site is located within walking and biking distance of a densely populated area, can be accessed by citizens using public and private transportation;
- The Market is strongly supported by Des Moines citizens and businesses

### **Concurrence**

The City Council Finance and Economic Development Committee supports this proposal for 2008 and directed staff to prepare operational and budgetary options for transitioning the management of the Des Moines Waterfront Farmers Market to the City of Des Moines for review during the City of Des Moines 2009 Budget process.



CITY ATTORNEY'S FIRST DRAFT - 02/07/2008

DRAFT RESOLUTION NO. 08-015

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DES MOINES, WASHINGTON, authorizing Stewardship Partners, a 501c3 non-profit organization, to conduct the Des Moines Waterfront Farmers Market at the Des Moines Marina and South Marina Park on Saturdays from June 7, 2008 until October 25, 2008 and listing conditions under which such permission is granted.

WHEREAS, the City Council finds that the Des Moines Waterfront Farmers Market is a community event that enhances the quality of life for residents of the City of Des Moines, and

WHEREAS, Stewardship Partners wishes to sponsor and conduct the Des Moines Waterfront Farmers Market as a community event during the spring through fall of 2008, and

WHEREAS, the City of Des Moines wishes to permit the Des Moines Waterfront Farmers Market event and, at the same time, be held harmless from any liability arising from such activity; now therefore,

THE CITY COUNCIL OF THE CITY OF DES MOINES RESOLVES AS FOLLOWS:

Sec. 1. Permission is granted to Stewardship Partners to conduct the 2008 Des Moines Waterfront Farmers Market on Saturdays between June 7, 2008 and October 25, 2008, subject to the following conditions:

(1) Stewardship Partners shall defend and hold the City of Des Moines harmless from liability (excluding liability caused by the negligence or intentional acts of the City its officers, agents and employees which may result from the conduct of the Des Moines Waterfront Farmers Market.

(2) Stewardship Partners will provide, at minimum, financial support for the Des Moines Waterfront Farmers Market in the amount as proposed in the 2008 Farmers Market Budget and will pay for expenses such as the Market Manager, portable sanitary facilities, advertising and/or promotional banners associated with the event.

(3) The prime leadership of the Des Moines Waterfront Farmers Market activities shall be non-City personnel and it shall be clearly understood that assistance by City personnel is advisory to Stewardship Partners.

(4) Stewardship Partners shall provide general liability insurance in the minimum amount of two million dollars (\$2,000,000) aggregate to cover the event. The City of Des Moines shall be named as additional insured. Proof of such insurance must be delivered to the City thirty (30) days prior to the event.

(5) The Des Moines Waterfront Farmers Market will be permitted to erect such special signage as is appropriate during the thirty (30) days prior to and during the event. All such signage shall be removed within ten (10) days after the last Saturday in October.

(6) Normal licenses and fees for conduct of a Des Moines Waterfront Farmers Market event shall be waived where possible, provided the event subject to such permit or fee is fully sanctioned by Stewardship Partners and complies with all necessary requirements including health regulations related to Des Moines Waterfront Farmers Market. Fees required by other governmental agencies shall be the responsibility of the Stewardship Partners.

(7) An authorized official of Stewardship Partners shall execute a written agreement, on behalf of Stewardship Partners, acknowledging its responsibilities for the conduct of the Des Moines Waterfront Farmers Market and accepting such limitations as are contained in this resolution in addition to such limitations as may be imposed by the City Council or City Manager, including, but not limited to:

(a) Stewardship Partners agrees to take whatever reasonable measures are necessary to prevent damage to the Marina facility and to be responsible for any damage that may occur as a result of Stewardship Partners or its vendors' actions in the conduct of the Des Moines Waterfront Farmers Market; and

(b) A Des Moines Police Department command officer and/or the Fire Marshall of South King Fire & Rescue will have the authority to close the Des Moines Waterfront Farmers Market down at any time should it be necessary, following assessment of any security issue.

**Sec. 2.** The Des Moines Waterfront Farmers Market will be allowed to have associated retail sales of food or merchandise.

**Sec. 3.** Upon execution of a written agreement incorporating all the terms and conditions of this resolution, the City Manager is authorized, at his discretion, to grant permission to Stewardship Partners to use and occupy, for the purpose of the Des Moines Waterfront Farmers Market, City facilities and property at the Des Moines Marina and South Marina Park.

**Sec. 4.** The City Manager is authorized, at his discretion, to grant permission to utilize City promotional tools such as the City Currents, Parks, Recreation and Senior Services Brochure, City Web Page and Channel 21 to inform and educate the public about the Des Moines Waterfront Farmers Market and will encourage Des Moines' businesses, service clubs, neighborhoods and citizens to support the Des Moines Waterfront Farmers Market as a community event through contribution of donated funds, volunteerism and/or attendance.

**Sec. 5.** Stewardship Partners will be allowed to solicit booth fees, a percentage of sales and/or charge an admission fee to vendors of the Des Moines Waterfront Farmers Market to recover the cost of the community event. Stewardship Partners shall bear responsibility for all collection, accounting, and reporting of any funds collected. The City grants this privilege based upon the promoter's agreement that any funds collected in amounts greater than the cost of the event including but not limited to costs associated with overhead, staff, promotion and security will be reinvested in the Des Moines Waterfront Farmers Market for the benefit of Des Moines residents.

**Sec. 6.** The City Manager is authorized to provide City assistance to the Des Moines Waterfront Farmers Market, which may include, without limitation, services by the Police, Public Works, Parks, and Marina departments for the purpose of



**AGREEMENT**  
**between**  
**THE CITY OF DES MOINES**  
**and**  
**STEWARDSHIP PARTNERS**  
**for**  
**2008 DES MOINES WATERFRONT FARMERS MARKET**

*THIS AGREEMENT* is entered into by and between the CITY OF DES MOINES, WASHINGTON (hereinafter "City"), a municipal corporation of the State of Washington, and Stewardship Partners (hereinafter "STEWARDSHIP PARTNERS"), a Washington non-profit corporation, regarding the 2008 Des Moines Waterfront Farmers Market.

*WHEREAS*, the City Council finds that the Des Moines Waterfront Farmers Market enhances the quality of life for residents of the City of Des Moines and wishes to permit it to operate at the Des Moines Marina property from spring through fall of 2008, and

*WHEREAS*, STEWARDSHIP PARTNERS is the primary sponsor of the Des Moines Waterfront Farmers Market and the City Council wishes to have STEWARDSHIP PARTNERS manage for one more year only as a transition the Des Moines Waterfront Farmers Market pursuant to certain terms and conditions; now therefore,

WHEREAS, the organization operating the 2007 Des Moines Farmers Market, Farming and the Environment, is unable to operate the market in 2008 or at any time in the future. F & E contacted another nonprofit in the Puget Sound area regarding ability and willingness to provide a one-year Farmers Market management;

WHEREAS, Stewardship Partners, a 501 (c)(3) non-profit organization helps private landowners restore and preserve the natural landscapes of Washington State, is willing to serve as a one-year transition sponsor of the Des Moines Farmers Market.

*IN CONSIDERATION* of the mutual benefits and conditions listed below, the parties agree as follows:

- (1) STEWARDSHIP PARTNERS agrees as follows:

STEWARDSHIP PARTNERS shall conduct the 2008 Des Moines Waterfront Farmers Market in compliance with the conditions outlined in City of Des Moines Resolution No. 08-, a copy of which is attached hereto and incorporated by this reference, and will comply with all federal, state, and local statutes, ordinances, and regulations. STEWARDSHIP PARTNERS agrees as follows:

(a) The prime leadership of all Des Moines Waterfront Farmers Market activities shall be non-City personnel and it is clearly understood that assistance by City personnel is advisory to STEWARDSHIP PARTNERS.

(b) STEWARDSHIP PARTNERS shall defend, indemnify and hold the City of Des Moines, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with Farming & the Environment's or its vendors' action taken in the conduct of the event or its associated activities, except for injuries and damages caused by the negligence or intentional conduct of the City its officers, agents and employees. In the event that any suit based upon such claim, injury, damage, or loss is brought against the City, STEWARDSHIP PARTNERS shall defend the same at its sole cost and expense and shall have control over the defense of the suit including any decisions regarding possible settlement of claims; provided, that the City retains the right, at the City's sole expense, to participate in said suit if any principal of governmental or public law is involved; and if final judgment be rendered against the City and its officers, agents, employees, or any of them, or jointly against the City and STEWARDSHIP PARTNERS and their respective officers, agents, and employees, or any of them, STEWARDSHIP PARTNERS shall satisfy the same.

(c) STEWARDSHIP PARTNERS will provide, at minimum, financial support for the Des Moines Waterfront Farmers Market in the amount as proposed in the 2008 Farmers Market Budget and will pay for expenses such as the Market Manager, portable sanitary facilities, advertising and/or promotional banners associated with the event. STEWARDSHIP PARTNERS shall provide adequate paid and/or volunteer staff, trained in courteous, efficient, sanitary service to patrons of the Farmers Market. STEWARDSHIP PARTNERS shall ensure that persons handling and vending food and beverage products shall comply with all necessary health regulations.

(d) F & E will be allowed to have associated retail sales of food or merchandise as identified in the Des Moines Waterfront Farmers Market 2008 Application Requirements. STEWARDSHIP PARTNERS shall not use the Des Moines Waterfront Farmers Market premises for any purpose other than herein specifically designated without prior written consent of the City.

(e) STEWARDSHIP PARTNERS shall provide general liability insurance in the minimum amount of two million dollars (\$2,000,000) aggregate to cover the Des Moines Waterfront Farmers Market. The City of Des Moines shall be named as additional insured. Proof of such insurance must be delivered to the City thirty (30) days prior to the event.

(f) F & E will be permitted to erect such special signage as is appropriate in the thirty (30) days prior to and during the event. All such signage shall be removed within ten (10) days after October 25, 2008.

(g) STEWARDSHIP PARTNERS will be allowed to solicit booth fees, a percentage of sales and/or charge an admission fee to vendors of the Des Moines Waterfront Farmers Market to recover the cost of the community event. STEWARDSHIP PARTNERS shall bear responsibility for all collection, accounting, and reporting of any funds collected. The City grants this privilege based upon the promoter's agreement that any funds collected in amounts greater than the cost of the event, including, but not limited to costs associated with overhead, staff, promotion and security, will be reinvested, as Farming & the Environment deems fit, in the Des Moines Waterfront Farmers Market for the benefit of the Des Moines community. STEWARDSHIP PARTNERS shall maintain an accounting system meeting the City's approval and agrees to permit the City and its agents and representatives at reasonable intervals at any and all times during usual business hours, to inspect all books, records and accounts of the Des Moines Waterfront Farmers Market showing gross sales and inventories.

(h) STEWARDSHIP PARTNERS agrees to take whatever reasonable measures are necessary to prevent damage to the Marina facility and to be responsible for any damage that may occur as a result of Farming & the Environment's or its vendors' action taken in the conduct of the Des Moines Waterfront Farmers Market; and

(i) A Des Moines Police Department command officer and/or the Fire Marshall of South King Fire District will have the authority to close the Des Moines Waterfront Farmers Market down at any time should it be necessary, following assessment of any security issue.

(2) The City agrees as follows:

(a) Upon execution of this Agreement, the City Manager is authorized to grant permission to STEWARDSHIP PARTNERS to use and occupy, for the purpose of the Des Moines Waterfront Farmers Market in 2008, City facilities and property at the Des Moines Marina and Fishing Pier.

(b) Normal City fees assessed by the City for conduct of the Des Moines Waterfront Farmers Market-related events shall be waived where possible, provided the events subject to such fees are fully sanctioned by STEWARDSHIP PARTNERS and comply with all necessary requirements including health regulations related to the Des Moines Waterfront Farmers Market. Fees required by other governmental agencies shall be the responsibility of STEWARDSHIP PARTNERS or its vendors, as agreed between themselves.

(c) The City Manager is authorized, at his discretion, to grant permission to utilize City promotional tools such as the *City Currents*, Parks, Recreation and Senior Services Brochure, City Web Page and Channel 21 to inform and educate the public about the event and will encourage Des Moines' businesses, service clubs, neighborhoods and citizens to support the Des Moines Waterfront Farmers Market as a community event through contribution of donated funds, volunteerism and/or attendance.



(d) The City Manager is authorized to provide City assistance to the Des Moines Waterfront Farmers Market, which may include, without limitation, all necessary power, water and garbage utilities; services by the Police, Public Works, Parks, and Marina departments for the purpose of logistics coordination, downtown and Marina area traffic control, road closures and parking lot management, boater and pedestrian safety. A 2008 Des Moines Waterfront Farmers Market Budget, 2008 Application Requirements and Market Day Rules will be approved in writing by the City Manager prior to the event. The maximum cost to the City for providing such services identified in the Des Moines Waterfront Farmers Market budget will be \$2,500.00. Any City operational costs over \$2,500.00 will be paid to the City of Des Moines by STEWARDSHIP PARTNERS and must be approved by STEWARDSHIP PARTNERS's Executive Director in writing before incurred. The City Manager shall provide a report to the City Council on services provided and costs thereof.

(e) The City retains the right from time to time during the term hereof to change the location or use of areas designated for the Des Moines Waterfront Farmers Market. If such relocations or adjustments are required the parties shall cooperate so that such changes shall not unnecessarily interrupt the quality and quantity of services rendered by the Farmers Market.

(3) Independent Accounting. The Des Moines Waterfront Farmers Market shall be operated as a separate entity by STEWARDSHIP PARTNERS and all accounting and reports regarding the Des Moines Framers Market shall be independent and separate from STEWARDSHIP PARTNERS's own accounting and from any other activities in which STEWARDSHIP PARTNERS may be involved. A true accounting of all receipts and disbursements shall be maintained by STEWARDSHIP PARTNERS and shall be made available for review and audit by the City at the discretion and expense of the City. Records of gross sales and receipts are to be kept for each revenue source and STEWARDSHIP PARTNERS is responsible for submittal of all taxes due in the ordinary course of operating the Des Moines Waterfront Farmers Market.

(4) Duration of Agreement. This Agreement is for performance of the duties set forth herein for the 2008 farmers market season..The parties agree that this agreement is for one year only and that the City or another approved entity will assume responsibility if the market is to continue in the future. SP is managing this in 2008 to allow other entities to organize for it's continuation, if appropriate. This Agreement will commence upon date of execution and ends upon the earlier of: (a) Completion of all functions required herein related to conduct of the 2008 Des Moines Waterfront Farmers Market, which shall be on or before April 1, 2009; (b) Execution of a new Contract; or (c) City's written termination of the Contract as described in Section 5 of this Agreement, provided, however, all indemnification and hold harmless provisions of this Agreement shall survive the termination of this Agreement.

(5) Termination. This Agreement may be terminated by the City for good cause upon thirty (30) days' written notice to STEWARDSHIP PARTNERS of the City's intention to terminate the same. Good cause is defined as either:

(a) Failure of STEWARDSHIP PARTNERS to perform any requirement of this contract within ten (10) days after the City makes written demand for such performance; or

(b) Termination required for purposes of public health, safety, welfare or the public interest, as determined by a majority of the Des Moines City Council in open public meeting.

(6) Discrimination Prohibited. STEWARDSHIP PARTNERS shall not discriminate against any employee, applicant, vendor, or any person seeking to participate in the Des Moines Waterfront Farmers Market on the basis of race, color, religion, creed, sex, national origin, marital status, or presence of any sensory, mental, or physical handicap.

(7) Assignment. This Agreement may not be assigned by STEWARDSHIP PARTNERS except to another non-profit organization with similar goals and purposes. STEWARDSHIP PARTNERS will provide prior written notice to the City of any assignment of this Agreement to another non-profit organization. Upon assignment, the assignee will be bound by the terms and conditions of this Agreement as STEWARDSHIP PARTNERS was.

(8) Entire Agreement. This Agreement contains the entire agreement between the parties and no other agreements, oral or otherwise, regarding the subject matter of this Agreement, shall be deemed to exist or bind any of the parties. Either party may request changes in the Agreement. Proposed changes mutually agreed upon will be incorporated by written amendments to this Agreement.

(9) Governing Law. The existence, validity, construction, and enforcement of this Agreement shall be governed in all respects by the laws of the State of Washington.

(10) Mediation/Arbitration. If a dispute arises from or relates to this Agreement or the breach thereof and if the dispute cannot be resolved through direct discussions, the parties agree to endeavor first to settle the dispute in an amicable manner by mediation administered by a mediator under the American Arbitration Association's Rules before resorting to arbitration. The mediator may be selected by agreement of the parties or through the American Arbitration Association. Following mediation, any unresolved controversy or claim arising from or relating to this Agreement or breach thereof shall be settled through arbitration which shall be conducted under the American Arbitration Association's Arbitration Rules. The arbitrator may be selected by agreement of the parties or through the American Arbitration Association. All fees and expenses for mediation or arbitration shall be borne by the parties equally. However, each party shall bear the expense of its own counsel, experts, witnesses, and preparation and presentation of evidence.

(11) Amendments/Authorization for Additional Services. This Agreement may be modified or amended and additional conditions may be authorized during the term of this Agreement upon the mutual written consent of the parties.

(12) Severability. If any term, provision, covenant, or condition of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions hereof shall remain in full force and effect and shall in no way be affected, impaired, or invalidated as a result of such decision.

(13) Waiver. The waiver by either party of any breach of any term, condition, or provision of the Agreement shall not be deemed a waiver of such term, condition, or provision or any subsequent breach of the same or any condition or provision of this Agreement.

(14) Captions. The captions used herein are for convenience only and are not a part of this Agreement and do not in any way limit or amplify the terms and provisions hereof.

(15) Time of Essence. Time is of the essence for each and all of the terms, covenants, and conditions of this Agreement.

(16) Concurrent Originals. This Agreement may be signed in counterpart originals.

(17) Ratification and Confirmation. Any acts consistent with the authority and prior to the effective date of this Agreement are hereby ratified and confirmed.

*IN WITNESS WHEREOF*, the parties have caused this Agreement to be executed on the dates written below.

CITY OF DES MOINES

Stewardship Partners

\_\_\_\_\_  
Anthony A. Piasecki  
Its City Manager  
At the direction of the Des Moines City  
Council by Adoption of Resolution No. ^  
It an Open Public Meeting on ^

\_\_\_\_\_  
By David Burger  
Its Executive Director

Date \_\_\_\_\_

Date \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney



## A G E N D A   I T E M

SUBJECT:  
2008 Interlocal Agreement between  
Normandy Park and Des Moines for Senior  
Services

ATTACHMENTS:

1. Draft Interlocal Agreement
2. 2007 Year-end Activity Report
3. Reimbursement Calculation

AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Parks, Recreation, & Senior  
Services

DATE SUBMITTED: January 26, 2008

CLEARANCES:

☐ Parks & Recreation Director

☒ City Attorney

☐ Finance Director

APPROVED BY THE CITY MANAGER  
FOR SUBMITTAL

**Purpose and Recommendation:**

The purpose of this Agenda Item is to seek Council authorization to enter into an Interlocal Agreement between the City of Des Moines and the City of Normandy Park for fiscal year 2008, whereby Normandy Park will contract for Senior Services from Des Moines in the amount of \$18,714 which has been determined as the pro-rata cost of direct services to Normandy Park residents.

For 2008, the formula used to assess the cost of providing senior services to Normandy Park is based on:  
i) the percentage of Normandy Park residents served by the Des Moines Senior Activity Center for 2007; and  
ii) the net budgeted cost for Des Moines senior services programs and services for 2008 (i.e. projected costs for programs and services minus projected program revenues). The percentage of Normandy Park residents served will be determined by senior services staff by tracking and comparing the number of Normandy Park participants against all senior services participants. The cost to Normandy Park will be the percentage of Normandy Park participants times the net budgeted cost for Des Moines senior services programs and services for the current year.

**Recommended Motion:**

"I move to approve the Interlocal Agreement between the City of Normandy Park and the City of Des Moines for the provision of Senior Services in fiscal year 2008 whereby Normandy Park will pay Des Moines for Senior Services in the amount of \$18,714 which represents the amount equal to Normandy Park's pro-rata share of costs for services based on 2007 participation levels and authorize the City Manager to sign the Agreement substantially in the form as submitted".

**Background:**

The City of Des Moines has provided Senior Services to the residents of Normandy Park since 1992. In December 2007, the City of Normandy Park was presented with the 2008 Senior Services funding request in the amount of \$22,042 based on second quarter participation at 11% for consideration as part of their budget process. The 2008 request has been modified to \$18,714 based on year-end data collection for Normandy Park participation of 9%.

The proposed 2008 Interlocal Agreement defines the scope of senior services to be provided by Des Moines and the details for compensation for senior services to be rendered this year based on the pro-rata cost of senior services provided to Normandy Park residents.

**Discussion:**

The proposed 2008 Interlocal Agreement between the City of Normandy Park and the City of Des Moines is for one year and is subject to negotiation on an annual basis. The methodology and funding amount identified in the Interlocal Agreement was reviewed with Normandy Park City Manager Doug Schulze in August. Normandy Park's City Council approved the tentative 2008 funding amount of \$22,242 at its December 11<sup>th</sup> meeting.

As in 2007, the 2008 formula used to assess the cost of providing senior services to Normandy Park is based on: i) the percentage of Normandy Park residents served by the Des Moines Senior Activity Center for 2007; and ii) the net budgeted cost for Des Moines senior services programs and services for 2008 (i.e. projected costs for programs and services minus projected program revenues). The percentage of Normandy Park residents served will be determined by senior services staff by tracking and comparing the number of Normandy Park participants against all senior services participants. The cost to Normandy Park will be the percentage of Normandy Park participants times the net budgeted cost for Des Moines senior services programs and services for the current year.

Senior Services staff has determined that the percentage of the senior services participants in 2007 who are Normandy Park residents is 9% and propose that Normandy Park pay for services based on a pro-rata share of the costs for direct services. In 2008 Des Moines Senior Services expenditure budgets totals \$299,843 (for senior services salaries, benefits, supplies, other services and charges and interfund payments which also include recreation customer service support) and program revenue totals projected at \$91,905, for a net budget of \$207,938. Therefore, the proposed annual cost to Normandy Park for the term of this agreement (2008 calendar year) is \$18,714 ( $\$207,938 \times 9\% = \$18,714.00$ ).

The Agreement allows Normandy Park residents access to all of the programs and services provided by Des Moines Senior Activity Center for adults fifty and older such as: classes, health enhancement programs, trips, health services, special events, legal services, health screenings, massage, nutrition, meals on wheels, medical lending equipment, dances, scholarships for low income participation, pet food assistance, arts and crafts, living well workshops, monthly newsletters, counseling, caregiver support, information and referral, transportation, income tax assistance, recreational activities, games and cards, sports, and volunteer recruitment and management. Des Moines will provide the necessary senior services personnel, equipment and facilities to perform the foregoing described senior services in a timely manner and collect fees for programs and services where a cost is involved. Des Moines will promote senior services to Normandy Park residents through the monthly newsletter delivered to retirement homes, assisted living centers, Normandy Park City Hall, and businesses in the City of Normandy Park, and the



local newspapers and provide the City with current senior programs and services information for marketing purposes on a quarterly basis.

Normandy Park will assist Des Moines by providing classroom or meeting space at Normandy Park City Hall as requested by Des Moines Senior Services staff, if space is available on the date(s) requested. The City will include senior programs and services information in the quarterly Normandy Park "*City Scene*" as space is available and include senior program and services information on the City of Normandy Park web page and through other resources Normandy Park utilizes to communicate with its residents regarding city programs, services, and events.

**Alternatives:**

- 1) City Council may use the method proposed by staff to determine payment for senior services rendered to Normandy Park for year 2008 to be reviewed on an annual basis.
- 2) City Council may propose other methods for determining the payment for senior services rendered to Normandy Park such as: the addition of indirect costs for year 2008 to be reviewed on an annual basis.
- 3) City Council may consider eliminating the provision of enhanced senior services to Normandy Park residents.

**Financial Impact:**

The \$18,714 funds provided through this Interlocal Agreement with the City of Normandy Park for senior services are calculated based on the direct cost of providing services. Funds support the many programs and services available to its citizens fifty and older. This amount is increased from the \$14,213 budgeted and received from Normandy Park in 2007.

Des Moines would provide Normandy Park with a quarterly invoice in the amount of \$4,678.50 (\$18,714.00 ÷ 4) no later than fifteen business days after the end of the calendar quarter. Payment will be due 30 days from the date of invoice and made payable to the City of Des Moines. In addition Des Moines will provide to Normandy Park a report listing Normandy Park attendance for the quarter at the senior activity center.

**Recommendation/Conclusion:**

It is recommended that the City Council approve the 2008 Interlocal Agreement between the City of Normandy Park and the City of Des Moines for senior services.

**Concurrence:**

City Administration, the Des Moines Senior Services Advisory Committee and Parks, Recreation and Senior Services staff recommends the approval of the 2008 Interlocal Agreement between the City of Des Moines and the City of Normandy Park.



**INTERLOCAL AGREEMENT**  
**For**  
**SENIOR SERVICES**  
**Between**  
**THE CITIES OF DES MOINES & NORMANDY PARK**

In Accordance with the Interlocal Cooperation Act (RCW 39.34), the Cities of Des Moines ("Des Moines"), and Normandy Park ("Normandy Park"), each of which is a Washington Municipal Corporation, hereby enter into the following AGREEMENT:

**RECITALS**

**WHEREAS:**

A. Des Moines and Normandy Park, through their respective city councils, have declared their intent to create a relationship whereby Normandy Park contracts for senior services from Des Moines.

B. Normandy Park and Des Moines recognize that the cost savings from shared senior services greatly outweigh the increased facility and administrative expenses in creating and maintaining separate facilities and accounting practices associated with senior services programs.

**NOW, THEREFORE,** Des Moines agrees to provide and Normandy Park agrees to pay for senior services for the benefit of the residents of Normandy Park who are fifty years of age and older on the following terms and conditions:

**I. TERM of AGREEMENT and RENEWAL**

**1.1 Term.** This Agreement shall be valid for one (1) year, commencing on January 1, 2008 and ending on December 31, 2008.

**1.2 Renewal.** This Agreement may be renewed only by written agreement of all of the Parties.

**II. DUTIES OF THE PARTIES**

**2.1 Duties of Des Moines.** Des Moines shall perform the following duties:

a) Welcome Normandy Park seniors to participate in all senior services programs that are offered by the Des Moines Parks, Recreation & Senior Services Department, including classes, health enhancement programs, trips, health services, special events, legal services, health screenings, massage, nutrition, meals on wheels, medical lending equipment, dances, scholarships for low income participation, pet food assistance, arts

and crafts, living well workshops, monthly newsletters, counseling, caregiver support, information and referral, transportation, income tax assistance, recreational activities, games and cards, sports, and volunteer recruitment and management;

b) Provide all necessary senior services personnel, equipment and facilities to perform the foregoing described senior services in a timely manner;

c) Collect all fees for programs and services where a cost is involved;

d) Promote senior services to Normandy Park residents through the monthly newsletter delivered to retirement homes, assisted living centers, Normandy Park City Hall, and businesses in the City of Normandy Park, and the local newspapers; and

e) Provide Normandy Park with all current senior programs and services information for marketing purposes on a quarterly basis.

**2.2 Duties of Normandy Park.** Normandy Park shall perform the following duties:

a). Provide classroom or meeting space at Normandy Park City Hall as requested by Des Moines Senior Services staff, if space is available on the date(s) requested;

b). Include senior programs and services information in the quarterly Normandy Park "*City Scene*" as space is available;

c). Include senior program and services information on the City of Normandy Park web page;

d). Promote senior programs and services through resources Normandy Park utilizes to communicate with its residents regarding city programs, services, and events;

e). Refer Normandy Park residents to Des Moines Senior Services as needed or requested for information, resources and assistance;

**III. COST OF SENIOR SERVICES & PAYMENT**

**3.1 Cost Basis.** Normandy Park shall pay Des Moines for providing senior services based on: i) the percentage of Normandy Park residents served by the Des Moines Senior Activity Center for the previous year; and ii) the net budgeted cost for Des Moines senior services programs and services for the current year (i.e. projected costs for programs and services minus projected program revenues). The percentage of Normandy Park residents served will be determined by senior services staff by tracking and comparing the number of Normandy Park participants

against all senior services participants. The cost to Normandy Park will be the percentage of Normandy Park participants times the net budgeted cost for Des Moines senior services programs and services for the current year.

- 3.2 Cost for Current Term.** Senior services staff has determined that the percentage of the senior services participants in 2007 who are Normandy Park residents is 9% and the net budgeted cost for Des Moines senior programs and services for 2007 is \$207,938.00. Therefore, the annual cost to Normandy Park for the term of this agreement (2008 calendar year) will be \$18,714.00. ( $\$207,938 \times 9\% = \$18,714.00$ ).
- 3.3 Quarterly Reporting and Payment to Des Moines.** Des Moines shall provide to Normandy Park a quarterly invoice in the amount of \$4,678.50 ( $\$18,714.00 \div 4$ ) no later than fifteen business days after the end of the calendar quarter. Payment will be due 30 days from the date of invoice and made payable to the City of Des Moines. In addition Des Moines will provide to Normandy Park a report listing Normandy Park attendance for the quarter at the senior activity center.

#### **IV. MISCELLANEOUS PROVISIONS**

- 4.1 Effective Date.** This Agreement shall be effective upon ratification by resolution of the governing body and execution by the Chief Executive Officer of each of the Parties.
- 4.2 Amendment.** This Agreement may be amended only upon consent of all Parties hereto. Any amendment hereto shall be in writing and shall be ratified and executed by the Parties in the same manner in which it was originally adopted.
- 4.3 Waiver.** The waiver by any party of any breach of any term, covenant, or condition of this Agreement shall not be deemed a waiver of any subsequent breach of the same term, covenant, or condition of this Agreement.
- 4.4 Severability.** If any provision of this Agreement shall be held invalid, the remainder of this agreement shall not be affected thereby.
- 4.5 Entire Agreement.** This Agreement represents the entire understanding of the Parties and supersedes any oral representations that are inconsistent with or modify its terms and conditions.
- 4.6 Counterparts.** This Agreement shall be effective whether signed by all Parties on the same document or whether signed in counterparts.



- 4.7 **Notices.** Except as otherwise provided in this Agreement, any notice required to be provided under the terms of this Agreement, shall be delivered by certified mail, return receipt requested or by personal service.

**EXECUTED and APPROVED** by the Parties in identical counterparts of this Agreement, each of which shall be deemed an original hereof, on the dates set forth below.

APPROVED AS TO FORM this \_\_\_\_\_  
day of \_\_\_\_\_, 2008.

DATED this \_\_\_\_\_ day of  
\_\_\_\_\_, 2008.

CITY OF DES MOINES

By \_\_\_\_\_  
City Attorney of Des Moines

By \_\_\_\_\_  
Its City Manager  
At the direction of the Des Moines City  
Council by motion regularly passed at an  
open public meeting on \_\_\_\_\_, 2008.

APPROVED AS TO FORM this \_\_\_\_\_  
day of \_\_\_\_\_, 2008.

DATED this \_\_\_\_\_ day of  
\_\_\_\_\_, 2008.

CITY OF NORMANDY PARK

By \_\_\_\_\_  
City Attorney of Normandy Park

By \_\_\_\_\_  
Its City Manager  
At the direction of the Normandy Park City  
Council by motion regularly passed at an  
open public meeting on \_\_\_\_\_, 2008.

**DES MOINES SENIOR ACTIVITY CENTER****2007 Year End Report**

| <b>Services Provided</b>                         | <b>2007<br/>Normandy<br/>Park</b> | <b>2007<br/>Des Moines</b> | <b>2007<br/>Totals</b> |
|--------------------------------------------------|-----------------------------------|----------------------------|------------------------|
| Number of visits for<br>participants year end    | 2,296 (9%)                        | 19,219                     | 21,515                 |
| UNDUPLICATED number of<br>participants year end  | 86                                | 595                        | 681                    |
| Number of Meals on Wheels<br>deliveries year end | 819                               | 3,670                      | 4,489                  |
| Number of Senior Shuttle trips<br>year end       | 412                               | 1,823                      | 2,235                  |

City of Des Moines  
Calculation for Normandy Park Senior Services Reimbursement

|                                                                          | Sr Services<br>2008 | Sr Program<br>2008 | TOTAL            |
|--------------------------------------------------------------------------|---------------------|--------------------|------------------|
| Salaries (current payplan x 103.5%)                                      | \$121,629           | \$13,926           | \$135,555        |
| Personnel Benefits (2008 projected benefits)                             | 36,893              | 2,118              | 39,011           |
| Supplies (2008 budget)                                                   | 9,370               | 6,750              | 16,120           |
| Other Services & Charges (2008 budget)                                   | 15,607              | 50,475             | 66,082           |
| Interfund Payments (2008 budget)                                         | 38,528              | 1,711              | 40,239           |
|                                                                          | <u>\$222,027</u>    | <u>\$74,980</u>    |                  |
| Sub-total                                                                |                     |                    | \$297,007        |
| Add: Bonnie Wilkins time (2008 budget) assisting in cash receipting - 5% |                     |                    | 2,836            |
| Less: Program Fee Revenues (2008 budget)                                 |                     |                    | (91,905)         |
| Base Amount for 2008 request                                             |                     |                    | <u>\$207,938</u> |
| 9% of NP participation                                                   |                     |                    | <u>\$18,714</u>  |
| With indirect costs, 9% of NP participation would be                     |                     |                    | <u>\$20,168</u>  |
| Indirect costs (based on 2006 Actual):                                   |                     |                    |                  |
| City Manager                                                             | \$2,280             |                    |                  |
| Legal                                                                    | 4,137               |                    |                  |
| City Clerk                                                               | 979                 |                    |                  |
| Human Resources                                                          | 1,777               |                    |                  |
| Finance                                                                  | <u>6,979</u>        |                    |                  |



## A G E N D A I T E M

### BUSINESS OF THE CITY COUNCIL CITY OF DES MOINES, WASHINGTON

SUBJECT:  
2008-2009 Recycling Program Funding

FOR AGENDA OF February 28, 2008  
DEPT. OF ORIGIN P.B.P.W.  
DATE SUBMITTED February 20, 2008

ATTACHMENTS:

1. Washington State Department of Ecology Coordinated Prevention Grant (CPG) No. G0800415;
2. King County Solid Waste Division Waste Reduction and Recycling (WR/R) Grant No. D36969D;
3. The City's Scope of Work and Budget proposed for the 2008 Local Hazardous Waste Management (LHWMP) grant.
4. Olympic Environmental Resources proposal for services;
5. Paul Shallow letters (October 4, 2007 and January 8, 2008).

CLEARANCES:

[X] P.B.P.W.  
[X] LEGAL

*[Handwritten signatures and initials]*  
for GF

APPROVED BY THE CITY MANAGER  
FOR SUBMITTAL

*[Handwritten signature]*

#### Purpose and Recommendation

The purpose of this report is for the City Council to review and authorize acceptance of two of the three grants for the City's recycling program and to preliminarily confirm how these funds are to be allocated.

The first grant is the 2008-2009 Washington State Department of Ecology Coordinated Prevention Grant (CPG) Grant (Attachment 1). The second is the 2008-2009 King County Solid Waste Division Waste Reduction and Recycling (WR/R) Grant (Attachment 2). The third grant that the City typically receives for recycling is the 2008 Seattle and King County Department of Public Health Local Hazardous Waste Management Program (LWHMP) Grant. The City's proposed scope of work for that grant is included as Attachment 3. The Seattle and King County Department of Public Health has not yet finalized the contract form of this grant in order to forward it to the City.

The City Council is required to review all Interlocal Agreements between the City and other public agencies. All grants the City receives for recycling purposes are in the form of interlocal agreements with the State of Washington, King County and Seattle/King County.

The subject grants will fund the City's annual Household Waste Collection and Recycling Events, Business Recycling Events, and the purchase of products made from recycled materials

for 2008 and 2009. If the City Council decides to accept the grants, staff recommends that the City Council make the following motion:

**Motion 1:** "I move to authorize the City Manager to sign the 2008-2009 CPG Grant No. G0800415 between the City of Des Moines and the Washington State Department of Ecology and the 2008-2009 King County Solid Waste Division WR/R Grant No. D36969D."

### Background

This agenda item seeks City Council approval of the CPG and WR/R contracts for 2008-2009. The CPG grant will allocate \$35,435 to the City of Des Moines recycling program for household recycling collection events in 2008 and 2009. The WR/R grant will allocate \$45,086 for household recycling collection events, business recycling collection events, and the purchase of products made from recycled materials for 2008 and 2009. The missing LHWMP grant, when the City receives it, will allocate \$11,459.22 for household recycling collection events in 2008.

If the City Council accepts the CPG and WR/R grants for 2008 and 2009, the City will continue to reduce the amount of hazardous and non-hazardous materials going into the local waste stream at no additional cost to the City. Again, staff anticipates receiving the remaining LHWMP grant in the very near future, perhaps within the next 10 days. Staff will bring that grant to the Council separately.

### Discussion

In addition to sponsoring two annual Household Waste Collection and Recycling Events, the City will use the grant monies to co-sponsor an annual Business Recycling Event with the Cities of Normandy Park and Burien, and sponsor the purchase of products made from recycled materials.

Household Collection and Recycling Events - For over 10 years, the City has used grant monies to sponsor annual Household Waste Collection and Recycling Events. The Spring and Fall Events have proven to be exceptionally popular among Des Moines residents because they provide a local site to recycle materials that are not accepted by the curbside recycling program. Residents will be able to recycle motor oil, oil filters, porcelain toilets and sinks, cardboard, computer monitors, petroleum based products, antifreeze, tires, batteries, electronic equipment including cell phones, scrap metals, appliances, propane tanks, and reusable household items. At the events, these "hard-to-recycle" items are accepted at little or no cost to residents.

Business Recycling Event - The annual Business Recycling Events typically occur in July at the Washington Criminal Justice Training Center in SeaTac. The City will pool its grant resources with the Cities of Normandy Park and Burien to provide a comprehensive recycling event where businesses may drop off the following items: clean scrap wood/pallets; electronic/computer

equipment computer monitors, fluorescent lights; office recyclables/cardboard; toner cartridges; cellular phones; and plastics. As with the household collection and recycling events, the Business Recycling Event will accept the above items at little or no cost to business owners.

Products made from Recycled Materials – In order to support the recycling industry and close the recycling loop, the City will purchase products made from recycled materials. In the recent past, the City has purchased rain barrels for distribution to City residents and park benches for installation in key locations in the City. Both of these products divert roughly twice their weight in plastic material from the waste stream when produced. Staff anticipates much the same use of funds over the 2008-2009 grant cycle. However, staff will seek Council direction on how to allocate these funds if any new uses of them arise.

Contract Assistance - The City published a Request for Proposals (RFP) to demonstrate compliance with the requirement of the CPG grant to include women- and minority-owned businesses in the City's search for contract services paid by the grant. The response deadline for the RFP was February 8, 2008. Staff received one proposal from Olympic Environmental Resources (OER) (Attachment 4). OER has coordinated the City recycling collection events for over ten years. Staff has had an excellent working relationship with OER and does not have reservations using this firm for the 2008-2009 contract period. Staff will proceed in developing a contract for these services with OER for future review by Council.

#### Alternatives

1. The City Council may accept Contract No. G0800415 with Washington State Department of Ecology to accept CPG grant funds and accept Contract No. D36969D with King County Solid Waste Division to accept WR/R grant funds.
2. The City Council may choose not to accept Contract No. G0800415 with Washington State Department of Ecology and/or not to accept Contract No. D36969D with King County Solid Waste Division and forego CPG and/or WR/R grant.
3. The City Council may continue this Agenda Item and request that staff provides additional information on the CPG, LHWMP, and WR/R grant programs or simply wait until all grants are available.

#### Financial Impact

If the City Council accepts the CPG and WR/R grants, there will be no fiscal impact to the City related to Contract Numbers G0800415 and D36969D. However, if the City Council does not accept the CPG, LHWMP, and WR/R grants, then the City will need to use General Fund monies to maintain the City's recycling program.



### Recommendation

Staff recommends that the City Council:

Choose Alternative 1 and accept the 2008-2009 Washington State Department of Ecology CPG Grant and the 2008-2009 King County Solid Waste Division WR/R Grant.

Although we do not have the third (LHWMP) grant contract yet, we have reason to expect its arrival in approximately 1-2 weeks (Attachment 5). The 2008 Spring Recycling Event at the Des Moines Marina is scheduled for March 15, 2008. Staff is concerned about disrupting recycling services due to a third party delay (LHWMP grant). There are sufficient funds in the grants before Council tonight to cover the spring event temporarily until all grants are in place. For these reasons, staff would like Council to accept two of the three grants.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

AND

CITY OF DES MOINES

**Grant No: G0800415, Coordinated Prevention Grant Regular Cycle Agreement.**

This is a binding agreement entered into by and between the State of Washington Department of Ecology, hereinafter referred to as ECOLOGY, and the City of Des Moines, hereinafter referred to as the RECIPIENT, to carry out the activities described herein.

|                                        |                                               |
|----------------------------------------|-----------------------------------------------|
| JURISDICTION:                          | City of Des Moines                            |
| MAILING ADDRESS:                       | 21630 11th Avenue South, Suite D              |
| CITY, STATE, ZIP:                      | Des Moines, WA 98198                          |
| RECIPIENT GRANT COORDINATOR:           | Dave Steen                                    |
| TELEPHONE:                             | (206) 870-6532                                |
| FAX:                                   | (206) 870-6544                                |
| E-MAIL:                                | dsteen@desmoineswa.gov                        |
| RECIPIENT BILLING/INVOICE COORDINATOR: | Paul Devine - Olympic Environmental Resources |
| TELEPHONE:                             | (206) 938-8262                                |
| FAX:                                   | (206) 938-9873                                |
| E-MAIL:                                | pauldevine@msn.com                            |
| ECOLOGY GRANT OFFICER:                 | Peter D. Christiansen                         |
| TELEPHONE:                             | (425) 649-7076                                |
| FAX:                                   | (425) 649-7098                                |
| E-MAIL:                                | pchr461@ecy.wa.gov                            |
| FUNDING SOURCE                         | Local Toxics Control Account                  |
| MAXIMUM ELIGIBLE COST                  | \$ 47,246.00                                  |
| STATE GRANT SHARE                      | \$ 35,435.00                                  |
| LOCAL SHARE                            | \$ 11,811.00                                  |
| STATE MAXIMUM GRANT PERCENT            | 75 %                                          |
| FEDERAL TAX IDENTIFICATION NO.         | 91-6016496                                    |

For the purpose of this agreement, the RECIPIENT will be allowed to match the state grant share with cash and interlocal in-kind costs in accordance with application instructions.

This agreement is effective on **January 1, 2008**. Any work performed prior to the effective date of this agreement without prior written authorization and specified in the Scope of Work will be at the sole expense and risk of the RECIPIENT. This agreement shall expire no later than **December 31, 2009**.

**ATTACHMENT 1**

### REGULAR CYCLE SCOPE OF WORK

The project(s) set forth below summarize the RECIPIENT's budget(s) tracked by project, goals and expected outcomes, activities with timeline, method of evaluation, and estimated project cost.\* The estimated project cost is for grant officer information only; it will not be used for budget tracking purposes.

Recipient Responsibilities: The RECIPIENT is responsible for implementing activities identified in the local Comprehensive Solid Waste Management Plan and the Hazardous Waste Management Plan.

#### **A. CATEGORY: Waste Reduction and Recycling**

**TOTAL CATEGORY COST      CPG-BASE:    \$ 47,246.00**

##### **1.    PROJECT TITLE:    Des Moines Recycling Collection Events**

**Summary Description:** The RECIPIENT will host Recycling Collection Events for City residents in 2008 and 2009. The events will provide residents with the opportunity to divert hard-to-recycle items from the waste stream by recycling them in a convenient City location. The event will also serve as an opportunity to distribute educational materials on how to reduce waste and recycle using RECIPIENT sponsored or private sector recycling programs. The event may also serve as a venue for distribution of compost bins or other items to City residents.

*As of January 1, 2009, when implementation of the Electronics Products Recycling Law (70.95N) begins, collection and processing costs of items covered under the law will not be-eligible for CPG reimbursement. The only costs that will be eligible for CPG reimbursement related to electronics include: Public information and involvement, expansion of e-waste recycling beyond covered electronic products and staff time for technical assistance, coordination and collaboration.*

**Goal Statement:**            The goal of the program is to promote alternatives for residents to recycle and re-use hard-to-recycle items. This program will help the RECIPIENT promote recycling by diverting recyclable material from the City waste stream and act as a venue for the distribution of educational materials pertaining to waste reduction and recycling.

**Outcome Statement:**    As a result of the Residential Recycling Collection Events, The RECIPIENT estimates it will divert and recycle between 180-200 tons of material from the City residential waste stream and serve 1,650-1,750 households. ECOLOGY CPG funds will partially fund Recycling Collection Events in the spring of 2008 and 2009. The outcomes/impacts will be measured and the amount of waste diverted for recycling will be reported in the grant report.

#### **Work Plan and Activities with Timeline:**

| Activity                                                         | Timeline              |
|------------------------------------------------------------------|-----------------------|
| 1. Arrange date and site for event.                              | Jan, Feb, 2008 & 2009 |
| 2. Arrange event vendors.                                        | Jan, Feb, 2008 & 2009 |
| 3. Event publicity – develop, print, sort, and mail event flyer. | March, 2008 & 2009    |
| 4. Hold Recycling Collection Event                               | March, 2008 & 2009    |
| 5. Recycle materials collected at Collection Event               | March, 2008 & 2009    |



|                                                                  |                            |
|------------------------------------------------------------------|----------------------------|
| 6. Prepare project report for grant reimbursement.               | March, April, 2008 & 2009  |
| 7. Arrange date and site for event.                              | July, August, 2008 & 2009  |
| 8. Arrange event vendors.                                        | July, August, 2008 & 2009  |
| 9. Event publicity – develop, print, sort, and mail event flyer. | October, 2008 & 2009       |
| 10. Hold Recycling Collection Event                              | October, 2008 & 2009       |
| 11. Recycle materials collected at Collection Event              | October, 2008 & 2009       |
| 12. Prepare project report for grant reimbursement.              | Oct, November, 2008 & 2009 |

**Method of Evaluation:** The RECIPIENT will provide the following information to ECOLOGY for project evaluation:

- 1) The number of events held.
- 2) The number of event participants attending - the site greet will count cars as they arrive.
- 3) The volume of each material collected in pounds/tons as reported from event vendors and from material delivered to recycling centers.

\* Estimated Project Cost: \$ 47,246

### COMMUNICATION

ECOLOGY's regional grant officer will contact the RECIPIENT grant coordinator as needed to monitor progress toward goals and check consistency with Work Plans and Timelines. It is the responsibility of the RECIPIENT to contact his or her grant officer with any other questions or concerns regarding the grant. Grant officers are available to provide technical assistance at any time during the grant cycle.

### BILLING AND REPORTING

A payment request consists of Forms A-19, B2, C2 and a progress report. Unless stated otherwise in this agreement, the RECIPIENT must submit a payment request (with a progress report) at least quarterly, but no more often than once per month. The RECIPIENT has elected to budget by project and therefore shall itemize by project element on the B2 and C2 forms and as laid out in the following CPG Budget Table. Itemized costs in payment requests must be by project.

The RECIPIENT has elected to submit all supporting documentation as back-up with each payment request. The RECIPIENT must also keep record of supporting documents in accordance with the requirements outlined in the most recent revision of Administrative Requirements for Recipients of Ecology Grants and Loans and make these documents available to ECOLOGY staff upon request.

The RECIPIENT must also complete a Final Performance Analysis (FPA) form online through the Information Clearinghouse. The FPA must be submitted before ECOLOGY can process your final payment request. The final payment request and the FPA are due no later than **February 15, 2010** for Regular Cycle grants.

**REGULAR CYCLE CPG BUDGET**

| <b>PROJECT</b>                            | <b>TOTAL PROJECT COST: CPG<br/>BASE (174/I17)</b> |
|-------------------------------------------|---------------------------------------------------|
| I. Des Moines Recycling Collection Events | \$ 47,246.00                                      |
| <b>TOTAL MAXIMUM ELIGIBLE COST</b>        | <b>\$ 47,246.00</b>                               |

**FUND SOURCE: CPG BASE (174/I17)**

| <b>MAXIMUM ELIGIBLE COST:</b>       |                          | <b>\$ 47,246.00</b>      |
|-------------------------------------|--------------------------|--------------------------|
| <b>FUND</b>                         | <b>GRANT PERCENT (%)</b> | <b>STATE GRANT SHARE</b> |
| Local Toxics Control Account (LTCA) | 75 %                     | \$ 35,435.00             |
| <b>MATCH REQUIREMENT</b>            | <b>MATCH PERCENT (%)</b> | <b>LOCAL SHARE</b>       |
| Cash Match                          | 25 %                     | \$ 11,811.00             |

**ADDITIONAL BUDGET CONDITIONS**

1. Overhead is eligible; the RECIPIENT may charge 25 percent of salaries and benefits for time devoted specifically to projects outlined in this agreement.
2. The RECIPIENT contact for billing and invoice questions is:

RECIPIENT BILLING/INVOICE COORDINATOR: Paul Devine - Olympic Env. Resources

TELEPHONE: (206) 938-8262

FAX: (206) 938-9873

E-MAIL: pauldevine@msn.com

3. Grant payments should be made payable to: City of Des Moines
4. Grant payments should be mailed to this address:

JURISDICTION: City of Des Moines

ATTN: Dave Steen

MAILING ADDRESS: 21630 11th Avenue South, Suite D

CITY, STATE, ZIP: Des Moines, WA 98198

## SPECIAL TERMS AND CONDITIONS

### A. INTERLOCAL AGREEMENTS

If parties other than the RECIPIENT are contributing to the local share of project costs, memoranda of understanding or other written agreements confirming the contribution must be negotiated. These agreements must specify the exact work to be accomplished and be signed by all parties contributing to the local match of this project. Copies of these agreements shall be submitted to ECOLOGY.

### B. PROCUREMENT AND CONTRACTS

1. The RECIPIENT shall follow their standard procurement procedures and/or applicable state law in awarding contracts; RECIPIENTS with no formal procurement procedures must comply with the "Standards for Competitive Solicitation", found in the most recent revision of Administrative Requirements for Ecology Grants and Loans.
2. Following execution, at the request of ECOLOGY, the RECIPIENT shall submit a copy of all requests for qualifications (RFQs), requests for proposals (RFPs), and bid documents relating to this grant agreement to ECOLOGY.
3. The RECIPIENT may use existing contracts that conform to adopted procurement procedures and applicable state laws. The RECIPIENT shall notify ECOLOGY if it used contracts entered into prior to the execution of the grant agreement for performance of grant funded activities.

### C. SEPA COMPLIANCE

To ensure that environmental values are considered by the state and local government officials when making decisions, the RECIPIENT shall comply with the provisions of the State Environmental Policy Act (SEPA), Chapter 41.23C RCW, and the SEPA Rules, Chapter 197-11 WAC. Copies of the SEPA documents shall be sent to:

ECOLOGY's Environmental Review and Transportation Section  
P.O. Box 47703  
Olympia, WA 98504-7703

### D. WETLANDS PROTECTION

To comply with the directive of Executive Order 90-04, Protection of Wetlands, all local governments are requested and encouraged to make all of their actions consistent with the intent of this executive order; specifically, (1) to avoid, to the extent possible, adverse impacts associated with the destruction or modification of wetlands, and (2) to avoid direct or indirect support of new construction in wetlands wherever there is a practical alternative.

### E. FAILURE TO COMMENCE WORK

ECOLOGY reserves that right to terminate this agreement in the event the RECIPIENT fails to commence work on any of the projects funded herein within six (6) months after the effective date.

### F. PROJECT INCOME

Any income directly generated as a result of the activities funded by this grant shall be reported as a credit against the expenses of that activity, as required by ECOLOGY's Administrative Requirements for Ecology Grants and Loans.



G. GRANT REPORTING

1. The RECIPIENT, in conjunction with submission of payment requests, or at the request of the grant officer, shall prepare Progress Reports and submit them to ECOLOGY. The RECIPIENT must also complete and submit a Final Performance Analysis (FPA).
2. The RECIPIENT must submit all backup documentation paperwork along with each payment request or maintain all backup documentation in an accessible location and be subject to biennial documentation check visits by Ecology grant officers.

H. PROMOTIONAL AND EDUCATIONAL MATERIALS

A copy of all promotional and educational materials developed as part of this agreement shall be submitted electronically to ECOLOGY concurrent with public distribution. ECOLOGY shall have the right to use any printed materials developed as part of this agreement in any manner ECOLOGY deems appropriate. The Washington State Department of Ecology will be acknowledged for providing funding in all published material and oral presentations that result from this agreement.

I. AMENDMENTS AND MODIFICATIONS

No subsequent modification(s) or amendment(s) of this grant agreement shall be of any force or effect unless in writing, signed by authorized representatives of the RECIPIENT and ECOLOGY and made part of this agreement; *except* a letter of amendment will suffice to redistribute the budget without increasing the total maximum eligible cost or to change ECOLOGY's grant officer or the RECIPIENT's grant coordinator or to extend the period of performance as set forth in this grant agreement.

J. MINORITY AND WOMEN'S BUSINESS PARTICIPATION *(It is not mandatory for the RECIPIENT to abide by Part J of the Special Terms and Conditions; however, it is highly encouraged.)*

The RECIPIENT agrees to solicit and recruit, to the maximum extent possible, certified minority-owned (MBE) and women-owned (WBE) businesses in purchases and contracts initiated after the effective date of this Agreement.

In the absence of more stringent goals established by the RECIPIENT's jurisdiction, the RECIPIENT agrees to utilize ECOLOGY's goals for minority- and women-owned business participation in all bid packages, request for proposals, and purchase orders. These goals are expressed as a percentage of the total dollars available for the purchase or contract and are as follows:

|                           |         |       |
|---------------------------|---------|-------|
| Construction/Public Works | 10% MBE | 6%WBE |
| Architecture/Engineering  | 10% MBE | 6%WBE |
| Purchased Goods           | 8% MBE  | 4%WBE |
| Purchased Services        | 10% MBE | 4%WBE |
| Professional Services     | 10% MBE | 4%WBE |

No contract award or rejection shall be made based on achievement or non-achievement of the goals. Achievement of these goals is encouraged, however, and the RECIPIENT and ALL prospective bidders or persons submitting qualifications may take the following affirmative steps in any procurement initiated after the effective date of this agreement:

1. Include qualified minority and women's businesses on solicitation lists.
2. Assure that qualified minority and women's businesses are solicited whenever they are potential sources of services or supplies.

3. Divide the total requirements, when economically feasible, into smaller projects or quantities to permit maximum participation by qualified minority and women's businesses.
4. Establish delivery schedules, where work requirements permit, which will encourage participation of qualified minority and women's businesses.
5. Use the services and assistance of the State Office of Minority and Women's Business Enterprises (OMWBE) and the Office of Minority Business Enterprises of the U.S. Department of Commerce, as appropriate.

The RECIPIENT may report to ECOLOGY payments made to qualified firms at the time of submitting each invoice and on forms provided by ECOLOGY; the information should include:

- Name and State OMWBE certification number of any qualified firm receiving funds under the voucher, including any sub-and/or sub-subcontractors.
- The total dollar amount paid to qualified firms under this invoice.

K. ALL WRITINGS CONTAINED HEREIN

This agreement, the "General Terms and Conditions", and ECOLOGY's Administrative Requirements for Ecology Grants and Loans, contain the entire understanding between the parties, and there are no other understandings or representations except as those set forth or incorporated by reference herein.

IN WITNESS WHEREOF, the parties hereby execute this Grant Agreement:

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

CITY OF DES MOINES

\_\_\_\_\_  
Laurie Davies  
Program Manager  
Solid Waste and Financial Assistance

\_\_\_\_\_  
Date

\_\_\_\_\_  
Authorized Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name of Authorized Official

**APPROVED AS TO FORM ONLY**  
Assistant Attorney General

\_\_\_\_\_  
Title

**INTERLOCAL AGREEMENT FOR 2008-2009**

**Between**

**KING COUNTY and the CITY OF DES MOINES**

This two-year Interlocal Agreement (hereinafter referred to as the Agreement) is executed between King County, a political subdivision of the State of Washington, and the City of Des Moines a municipal corporation of the State of Washington, hereinafter referred to as "County" and "City" respectively.

This Agreement has been authorized by the legislative body of each party as designated below:

King County Ordinance No. 2003-0462

City \_\_\_\_\_

**PREAMBLE**

King County and the City of Des Moines adopted the 2001 King County Comprehensive Solid Waste Management Plan, which includes waste reduction and recycling goals. In order to help meet these goals, the King County Solid Waste Division has established a waste reduction and recycling grant program for the cities that operate under the King County Comprehensive Solid Waste Management Plan. This program provides funding to further the development and/or enhancement of local waste reduction and recycling projects and for broader resource conservation projects that integrate with waste reduction and recycling programs and direction. This grant program does not fund household hazardous waste collection activities. Program eligibility and grant administration terms are discussed in the Grant Guidelines, attached to this agreement as Exhibit B. Grant funding for this program is subject to the yearly budget approval process of the King County Council.

Grant funding approved by the King County Council is available to all King County cities that operate under the King County Comprehensive Solid Waste Management Plan. The City will spend its grant funds to fulfill the terms and conditions set forth in the scope of work which is attached hereto as Exhibit A and incorporated herein by reference. The County expects that any information and/or experience gained through the grant program by the City will be generously shared with the County and other King County cities.

**I. PURPOSE**

The purpose of this Agreement is to define the terms and conditions for funding to be provided to the City of Des Moines by the County for waste reduction and recycling programs and/or services as outlined in the scope of work and budget attached as Exhibit A.



## II. RESPONSIBILITIES OF THE PARTIES

The responsibilities of the parties to this Agreement shall be as follows:

### A. The City

1. Funds provided to the City by the County pursuant to this Agreement shall be used to provide waste reduction and recycling programs and/or services as outlined in Exhibit A. The total amount of funds available from this grant in 2008 shall not exceed \$22,543. The City understands that even though this agreement is two years in duration, funding for this program is subject to the yearly budget approval process of the King County Council.
2. This agreement provides for distribution of 2008 and 2009 grant funds to the City. However, 2009 funds are not available until January 1, 2009, and 2009 funding is contingent upon King County Council approval of the 2009 King County budget.
3. During the two year grant program, the City will submit a minimum of two, but no more than eight, progress reports to the County in a form approved by the County. Reports must be signed by a city official. These reports will include:
  - a) a description of each activity accomplished pertaining to the scope of work; and
  - b) reimbursement requests with either copies of invoices for each expenditure for which reimbursement is requested or a financial statement, prepared by the city's finance department, that includes vendor name, description of service, date of service, date paid and check number.

If the City chooses to submit up to the maximum of eight (8) progress reports and requests for reimbursement during the two year grant program, they shall be due to the County on the last day of the month following the end of each quarter - April 30, July 30, October 31, January 31 - except for the final progress report and request for reimbursement which shall be due by March 31, 2010.

If the City chooses to submit the minimum of two progress reports and requests for reimbursement during the two year grant program, they shall be due to the County on January 31, 2009 and March 31, 2010.

Regardless of the number of progress reports the City chooses to submit, in order to secure reimbursement, the City must provide in writing to the County by the 5<sup>th</sup> working day of January 2009 and January 2010, the dollar amount of outstanding expenditures for which the City has not yet submitted a reimbursement request.

3. The City shall submit a final report to the County which summarizes the work completed under the grant program and evaluates the effectiveness of the projects for which grant funds were utilized, according to the evaluation methods specified in the scope of work. The final report is due within six months of completion of the project(s) outlined in the scope of work, but no later than June 30, 2010.

4. If the City accepts funding through this grant program for the provision of Waste Reduction and Recycling programs and projects for other incorporated areas of King County, the City shall explain the relationship with the affected adjacent city or cities that allows for acceptance of this funding and the specifics of the proposed programs and projects within the scope of work document related thereto.
5. The City shall be responsible for following all applicable Federal, State and local laws, ordinances, rules and regulations in the performance of work described herein. The City assures that its procedures are consistent with laws relating to public contract bidding procedures, and the County neither incurs nor assumes any responsibility for the City's bid, award or contracting process.
6. During the performance of this Agreement, neither the City nor any party subcontracting under the authority of this Agreement shall discriminate on the basis of race, color, sex, religion, nationality, creed, marital status, sexual orientation, age, or presence of any sensory, mental, or physical handicap in the employment or application for employment or in the administration or delivery of or access to services or any other benefits under this Agreement as defined by King County Code, Chapter 12.16.
7. During the performance of this Agreement, neither the City nor any party subcontracting under the authority of this Agreement shall engage in unfair employment practices as defined by King County Code, Chapter 12.18. The City shall comply fully with all applicable federal, state and local laws, ordinances, executive orders and regulations that prohibit such discrimination. These laws include, but are not limited to, RCW Chapter 49.60 and Titles VI and VII of the Civil Rights Act of 1964.
8. The City shall use recycled paper for the production of all printed and photocopied documents related to the fulfillment of this Agreement. The City shall use both sides of paper sheets for copying and printing and shall use recycled/recyclable products wherever practical.
9. The City shall maintain accounts and records, including personnel, financial, and programmatic records, and other such records as may be deemed necessary by the County, to ensure proper accounting for all project funds and compliance with this Agreement. All such records shall sufficiently and properly reflect all direct and indirect costs of any nature expended and service provided in the performance of this Agreement.

These records shall be maintained for a period of six (6) years after termination hereof unless permission to destroy them is granted by the Office of the State Archivist in accordance with RCW Chapter 40.14. These accounts shall be subject to inspection, review or audit by the County and/or by federal or state officials as so authorized by law.

10. The City shall maintain a record of the use of any equipment that costs more than \$1,000 and is purchased with grant funds from King County for a total period of three (3) years. The records shall be compiled into a yearly evaluation report, a copy of which shall be submitted to King County by March 31 of each year through the year 2012.

11. The City agrees to credit King County on all printed materials provided by the County, which the City is duplicating, for distribution. Either King County's name and logo must appear on King County materials (including fact sheets, case studies, etc.), or, at a minimum, the City will credit King County for artwork or text provided by the County as follows: "artwork provided courtesy of King County Solid Waste Division" and/or "text provided courtesy of King County Solid Waste Division."
12. The City agrees to submit to the County copies of all written materials which it produces and/or duplicates for local waste reduction and recycling projects which have been funded through the waste reduction and recycling grant program. Upon request, the City agrees to provide the County with a reproducible copy of any such written materials and authorizes the County to duplicate and distribute any written materials so produced, provided that the County credits the City for the piece.
13. If the City accepts funding through this grant program for the provision of recycling collection events for adjacent areas of unincorporated King County, the City shall send announcements of the events to all residences listed in the carrier routes provided by King County. The announcements and all other printed materials related to these events shall acknowledge King County as the funding source.
14. The City understands that funding for recycling collection events for adjacent areas of unincorporated King County will be allocated on a yearly basis subject to the King County Council's yearly budget approval process and that provision of funds for these events is not guaranteed for the second year of the grant program.
15. This project shall be administered by Dave Steen, Planning Aide; 21630 11<sup>th</sup> Ave S, Suite D; Des Moines, WA 98198; 206.870.6532; dsteen@desmoineswa.gov, or designee.

B. The County:

1. The County shall administer funding for the waste reduction and recycling grant program. Funding is designated by city and is subject to the King County Council's yearly budget approval process. Provided that the funds are allocated through the King County Council's yearly budget approval process, grant funding to the City will include a base allocation of \$5,000 per year with the balance of funds to be allocated according to the city's percentage of King County's residential and employment population. However, if this population based allocation formula calculation would result in a city receiving less than \$10,000 per year, that city shall receive an additional allocation that would raise their total grant funding to \$10,000 per year.

The City of Des Moines' budgeted grant funds for 2008 are \$22,543. Unspent 2008 funds may be carried over to 2009, but 2009 funds will not carry over to 2010.



The City of Des Moines' estimated grant funds for 2009 are \$22,543. 2009 funds are not available until January 1, 2009, and 2009 funding is contingent upon King County Council approval of the 2009 King County budget. Following approval of the 2009 King County budget, the County's grant program administrator will notify the city of the final 2009 grant funding.

2. Within forty-five (45) days of receiving a request for reimbursement from the City, the County shall either notify the City of any exceptions to the request which have been identified or shall process the request for payment. If any exceptions to the request are made, this shall be done by written notification to the City providing the reason for such exception. The County will not authorize payment for activities and/or expenditures which are not included in the scope of work and budget attached as Exhibit A, unless the scope has been amended according to Section V of this Agreement. King County retains the right to withhold all or partial payment if the City's report(s) and reimbursement request(s) are incomplete (i.e., do not include proper documentation of expenditures and/or adequate description of each activity described in the scope of work for which reimbursement is being requested), and/or are not consistent with the scope of work and budget attached as Exhibit A.
3. The County agrees to credit the City on all printed materials provided by the City to the County, which the County duplicates, for distribution. Either the City's name and logo will appear on such materials (including fact sheets, case studies, etc.), or, at a minimum, the County will credit the City for artwork or text provided by the City as follows: "artwork provided courtesy of the City of Des Moines" and/or "text provided courtesy of the City of Des Moines".
4. The County retains the right to share the written material(s) produced by the City which have been funded through this program with other King County cities for them to duplicate and distribute. In so doing, the County will encourage other cities to credit the City on any pieces that were produced by the City.
5. The waste reduction and recycling grant program shall be administered by Morgan John, a Project Manager, or designee, to be specified by the King County Solid Waste Division.

### **III. DURATION OF AGREEMENT**

This Agreement shall become effective on either January 1, 2008 or the date of execution of the Agreement by both the County and the City, if executed after January 1, 2008 and shall terminate on December 31, 2009. However, if execution by either party does not occur until after January 1, 2008, this Agreement allows for disbursement of grant funds to the City for County-approved programs initiated between January 1, 2008 and the later execution of the Agreement provided that the City complies with the reporting requirements of Section II. A of the Agreement.

### **IV. TERMINATION**

- A. This Agreement may be terminated by King County, in whole or in part, for convenience without cause prior to the termination date specified in Section III, upon thirty (30) days advance written notice
- B. This Agreement may be terminated by either party, in whole or in part, for cause prior to the termination date specified in Section III, upon thirty (30) days advance written notice. Reasons for

termination for cause may include but not be limited to: nonperformance; misuse of funds; and/or failure to provide grant related reports/invoices/statements as specified in Section II.A.3. and Section II.A.4.

- C. If the Agreement is terminated as provided in this section: (1) the County will be liable only for payment in accordance with the terms of this Agreement for services rendered prior to the effective date of termination; and (2) the City shall be released from any obligation to provide further services pursuant to this Agreement.
- D. Nothing herein shall limit, waive, or extinguish any right or remedy provided by this Agreement or law that either party may have in the event that the obligations, terms and conditions set forth in this Agreement are breached by the other party.

## **V. AMENDMENTS**

This Agreement may be amended only by written agreement of both parties. Amendments to scopes of work will only be approved if the proposed amendment is consistent with the most recently adopted King County Comprehensive Solid Waste Management Plan. Funds may be moved between tasks in the scope of work, attached as Exhibit A, only upon written or verbal request by the City and written or verbal approval by King County. Such requests will only be approved if the proposed change(s) is (are) consistent with and/or achieves the goals stated in the scope and falls within the activities described in the scope

## **VI. HOLD HARMLESS AND INDEMNIFICATION**

The City shall protect, indemnify, and hold harmless the County, its officers, agents, and employees from and against any and all claims, costs, and/or issues whatsoever occurring from actions by the City and/or its subcontractors pursuant to this Agreement. The City shall defend at its own expense any and all claims, demands, suits, penalties, losses, damages, or costs of any kind whatsoever (hereinafter "claims") brought against the County arising out of or incident to the City's execution of, performance of or failure to perform this Agreement. Claims shall include but not be limited to assertions that the use or transfer of any software, book, document, report, film, tape, or sound reproduction or material of any kind, delivered hereunder, constitutes an infringement of any copyright, patent, trademark, trade name, and/or otherwise results in unfair trade practice.

## **VII. INSURANCE**

- A. The City, at its own cost, shall procure by the date of execution of this Agreement and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damages to property which may arise from or in connection with performance of work pursuant to this Agreement by the City, its agents, representatives, employees, and/or subcontractors. The minimum limits of this insurance shall be \$1,000,000 general liability insurance combined single limit per occurrence for bodily injury, personal injury, and property damage. Any deductible or self-insured retentions shall be the sole responsibility of the City. Such insurance shall cover the County, its officers, officials, employees, and agents as additional insureds against liability arising out of activities performed by or on behalf of the City pursuant to this Agreement. A valid Certificate of Insurance is attached to this Agreement as Exhibit C, unless Section VII.B. applies.
- B. If the Agency is a Municipal Corporation or an agency of the State of Washington and is self-insured for any of the above insurance requirements, a written acknowledgement of self-insurance is attached to this Agreement as Exhibit C.

## **VIII. ENTIRE CONTRACT/WAIVER OF DEFAULT**

This Agreement is the complete expression of the agreement of the County and City hereto, and any oral or written representations or understandings not incorporated herein are excluded. Waiver of any default shall not be deemed to be a waiver of any subsequent default. Waiver of breach of any provision of this Agreement shall not be deemed to be waiver of any other or subsequent breach and shall not be construed to be a modification of the terms of this Agreement unless stated to be such through written approval by the County, which shall be attached to the original Agreement.

## **IX. TIME IS OF THE ESSENCE**

The County and City recognize that time is of the essence in the performance of this Agreement.

## **X. SEVERABILITY**

If any section, subsection, sentence, clause or phrase of this Agreement is, for any reason, found to be unconstitutional or otherwise invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions.



## XI. NOTICE

Any notice required or permitted under this Agreement shall be deemed sufficiently given or served if sent to the King County Solid Waste Division and the City at the addresses provided below:

Morgan John, Project Manager, or a provided designee,  
King County Solid Waste Division  
Department of Natural Resources and Parks  
201 South Jackson Street, Suite 701  
Seattle, WA 98104-3855

If to the City:

*Dave Steen, Planning Aide  
Planning, Building and Public Works  
City of Des Moines  
21630 11th Ave. S., Suite D  
Des Moines, WA 98198*

IN WITNESS WHEREOF this Agreement has been executed by each party on the date set forth below:

City

King County

Accepted for King County Executive

\_\_\_\_\_  
(Title)

BY \_\_\_\_\_

Pam Bissonnette, Director  
Department of Natural Resources and Parks

For Ron Sims, King County Executive

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

Pursuant to \_\_\_\_\_

Pursuant to Ordinance No. 2003-0462

Approved as to form:

Approved as to form:

\_\_\_\_\_  
City Attorney

\_\_\_\_\_  
King County Prosecuting Attorney

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

Exhibit A  
King County Waste Reduction and Recycling Grant Program  
City of Des Moines  
2008/09 Scope of Work

**A. Basic Information**

1. City of Des Moines
2. Grant project manager: Dave Steen  
Planning Aide  
City of Des Moines  
21630 11<sup>th</sup> Ave S, Suite "D"  
Des Moines, WA 98198  
Tel - (206) 870-6532  
Fax - (206) 870-6544  
Email - dsteen@desmoineswa.gov
3. Consultant name: Paul Devine  
Olympic Environmental Resources  
4715 SW Walker Street  
Seattle, WA 98116  
TEL - (206) 938-8262  
FAX - (206) 938-9873  
Email - pauldevine@msn.com
4. Budget: 2008  
\$22,543.00  
  
2009  
\$22,543.00  
  
Total: \$45,085.00

**B. Scope of Work**

**1. Task One: Recycling Collection Events**

A. Schedule - Spring and Fall, 2008/07

B. Task Activities

- Number of Recycling Collection Events – Four
- Materials to be collected:
  - Appliances

- Refrigerators and Freezers+
  - Ferrous Metals
  - Non-ferrous Metals
  - Tires+
  - Lead Acid Batteries
  - Household Batteries
  - Porcelain Toilets and Sinks+
  - Propane Tanks+
  - Cardboard
  - Reusable Household Goods
  - Textiles
  - Used Motor Oil
  - Used Motor Oil Filters
  - Used Antifreeze
  - Used Petroleum Based Products
  - Bulky Yard Debris\*
  - Clean Scrap Wood\*
  - Concrete, Asphalt, Rock, and Brick (CRAB)\*\*
  - Electronic Equipment
  - Computer Monitors+
  - TV Sets+
- +User fees apply

\*Wood waste will be collected in the spring only

\*\*CRAB will be collected in the fall only.

- The following educational materials will be distributed:
  - Information on City Recycling Programs.
  - Educational Materials produced by King County Department of Natural Resources and Local Hazardous Waste Management Plan.
  - Other educational materials as appropriate.
- Event promotional methods
  - This event will be coordinated with King County and flyers will be sent to Des Moines households.
  - By distributing a promotional flyer through direct mailings.
  - By notices in City newsletters (whenever possible).
  - By posting a notice at City Hall and on the City cable channel and City web site (if available).
  - By publicizing the event through the King County Solid Waste Division Promotional Activities.

C) Task evaluation. Event reports will include:

- Number of vehicles attending
- Volume of each material collected
- Event cost by budget category



- Event comments
- Graphic or tabular comparison of 2008/09 volumes and vehicles with prior year's events
- Summary of survey data collected (if taken)

D) Task Budget: \$19,000.00

| Estimated Costs                    | 2008/09     | 2008        | 2008        | 2008       | 2009       | TOTAL       |
|------------------------------------|-------------|-------------|-------------|------------|------------|-------------|
|                                    | WRR         | LHWMP       | CPG         | WRR        | WRR        |             |
| City Staff Costs                   | \$1,800.00  | \$1,145.92  | \$1,777.17  | \$900.00   | \$900.00   | \$4,723.09  |
| Management/Staffing/Admin/Graphics | \$4,082.00  | \$3,855.47  | \$7,945.05  | \$2,041.00 | \$2,041.00 | \$15,882.52 |
| Event Staff Costs                  | \$0.00      | \$0.00      | \$4,400.00  | \$0.00     | \$0.00     | \$4,400.00  |
| Collection/Hauling Costs           |             |             |             |            |            |             |
| Wood Waste                         | \$2,000.00  | \$0.00      | \$0.00      | \$1,000.00 | \$1,000.00 | \$2,000.00  |
| Scrap Metal, Appliances, etc.      | \$4,768.00  | \$0.00      | \$0.00      | \$2,384.00 | \$2,384.00 | \$4,768.00  |
| Tires                              | \$2,000.00  | \$0.00      | \$0.00      | \$1,000.00 | \$1,000.00 | \$2,000.00  |
| Used Oil/Antifreeze                | \$0.00      | \$2,200.00  | \$0.00      | \$0.00     | \$0.00     | \$2,200.00  |
| Batteries                          | \$0.00      | \$500.00    | \$0.00      | \$0.00     | \$0.00     | \$500.00    |
| CRAB                               | \$2,400.00  | \$0.00      | \$0.00      | \$1,200.00 | \$1,200.00 | \$2,400.00  |
| Printing/Mailing                   | \$0.00      | \$2,200.00  | \$2,200.00  | \$0.00     | \$0.00     | \$4,400.00  |
| Event Supplies                     | \$0.00      | \$500.00    | \$649.25    | \$0.00     | \$0.00     | \$1,149.25  |
| Other Expenses - rentals, etc      | \$1,950.00  | \$1,057.83  | \$746.03    | \$975.00   | \$975.00   | \$3,753.86  |
| TOTALS                             | \$19,000.00 | \$11,459.22 | \$17,717.50 | \$9,500.00 | \$9,500.00 | \$48,176.72 |

NOTE: Hourly rates for City staff are \$50.00 per hour. Hourly rates for consultants are as follows: project manager - \$70.00 and event staff - \$55.00.

E) Task Performance Objectives:

The City plans to send out approximately 8,000 promotional flyers to Des Moines households per event and publicize the event through King County promotional activities, including County websites and telephone assistance. The City anticipates collecting 110-135 tons of material from the local waste stream each year.

The benefits expected by the collection of these materials will be to divert them from the waste stream and process them for recycling. The event will also provide an opportunity to recycle moderate risk waste. The King County Health Department and Washington State Department of Ecology will pay for event expenses as well.

F) Task Impact Objectives:

By hosting Recycling Collection Events, Des Moines can reduce the amount of recyclable material finding their way to the local landfill. The Cities of Des Moines has a population of roughly 29,000. The City expects, based on past events, that 850-1,000 households will actively participate each year by bringing recyclable materials to the event for proper disposal and recycling. This will result in 110-135 tons of material diverted from the local waste stream for recycling each year.

In addition to diverting materials from the City waste stream, attracting residents to events provides an opportunity to distribute educational material on City and King County recycling programs. The educational materials can enhance the knowledge of residents and improve behavior in purchase, handling, and disposal of recyclable materials.

## 2. Task Two: Business Recycling Events

A) Task Schedule: Summer, 2008/09

B) Task Activities:

- Number of Business Recycling Events – Two
- Task Description - The City will implement two Business Recycling Events. The events will be held on a summer weekday, at a central location in Des Moines or Normandy Park. The City will work with the City of Normandy Park businesses to participate in the events. Des Moines costs invoiced to the City of Des Moines.
- Materials to be collected:
  - Clean Scrap Wood/Pallets
  - Electronic Equipment
  - Computer monitors+
  - Fluorescent Lights
  - Office Recyclables/Cardboard
  - Toner Cartridges
  - Cellular phones
  - Plastics
  - Other materials if feasible

+User fees apply
- The following educational materials will be distributed:
  - Information on City Recycling Programs.
  - Educational Materials produced by King County Department of Natural Resources and Local Hazardous Waste Management Plan.
  - Other educational materials as appropriate.
- Event promotional methods
  - By distributing a promotional flyer through direct mailings.
  - By notices in City/community newsletters/and local newspapers (whenever possible).
  - By posting a notice at City Hall and on the City cable channel and web site (if available).
  - By publicizing the event through the King County Solid Waste Division Promotional Activities.
- Task evaluation. Event reports will include:
  - Number of vehicles attending

- Volume of each material collected
- Event cost by budget category
- Event comments
- Graphic or tabular comparison of 2008/09 volumes and vehicles with prior year's events
- Summary of survey data collected (if taken)

C) Task Budget: \$10,000.00

| ESTIMATED COSTS                         | 2008 Cost  | 2009 Cost  | 2008/09 Total |
|-----------------------------------------|------------|------------|---------------|
| Staff Cost                              | \$500.00   | \$500.00   | \$1,000.00    |
| Administration and Supplies             | \$300.00   | \$300.00   | \$600.00      |
| Consultant and Contractor Services      | \$4,000.00 | \$4,000.00 | \$8,000.00    |
| Flyer - Printing and Distribution Costs | \$200.00   | \$200.00   | \$400.00      |
| Total                                   | \$5,000.00 | \$5,000.00 | \$10,000.00   |

NOTE: Hourly rates for City staff are \$50.00 per hour. Hourly rates for consultants are as follows: project manager - \$70.00 and event staff - \$55.00.

E) Task Performance Objectives:

The City plans to send out approximately 1,000 promotional flyers to Des Moines businesses per event and publicize the event through King County promotional activities, including County websites and telephone assistance. The City anticipates collecting 10-12 tons of material from the Des Moines businesses waste stream over a two-year period. The benefits expected by the collection of these materials will be to divert them from the waste stream and process them for recycling.

F) Task Impact Objectives:

By hosting Business Collection Events, Des Moines can reduce the amount of recyclable material finding their way to the local landfill. The City of Des Moines has an employee population of roughly 6,000. The City expects that 100-120 businesses will actively participate each year by bringing recyclable materials to the event for proper disposal and recycling. This will result in 10-12 tons of material diverted from the local waste stream for recycling.

In addition to diverting materials from the City waste stream, attracting business to events provides an opportunity to distribute educational material on City and King County recycling programs. The educational materials can enhance the knowledge of business and improve behavior in purchase, handling, and disposal of recyclable materials.



### 3. Task Three: Purchase Products Made From Recycled Materials

A) Task Schedule: 2008/07

B) Task Activities:

In order to support the recycling industry and close the recycling loop, the City would like to purchase products made from recycled materials. Doing so will support recycling collection programs and help ensure the success of the recycling industry. The City will support recycling programs by purchasing items such as recycle content rain barrels for distribution and recycled benches for City parks and open space areas. The rain barrels weight approximately 40-50 pounds each and divert roughly twice that amount of plastic material from the waste stream when produced. Recycle content benches weigh approximately 600-800 pounds and divert roughly twice that amount of plastic material from the waste stream when produced. The City may install the recycled content benches in highly visible areas with a notice that the benches are made from recycled content. The City would promote these locations in newsletters and parks brochure as most of these will be installed in heavy recreational use areas. The City may promote rain barrel distribution to City residents and may distribute the rain barrel at City Recycling Collection Events or through a "virtual sale" via the City web site for home delivery.

C) Task Budget: \$16,085.00

| Recycled Product Purchase  | 2008 Cost  | 2009 Cost  | 2008/09 Total |
|----------------------------|------------|------------|---------------|
| Staff Cost                 | \$804.25   | \$804.25   | \$1,608.50    |
| Purchase Recycled Products | \$7,238.25 | \$7,238.25 | \$14,476.50   |
| TOTAL                      | \$8,042.50 | \$8,042.50 | \$16,085.00   |

D) Task Performance and Impact Objectives:

The goal of this program is to help ensure the success of the recycling industry by adding to the demand for products made from recycled materials. By purchasing products made from recycled content, the City will divert recyclable material from the waste stream. The City may distribute rain barrels to City residents and install the recycle content benches in highly visible areas and that will help promote recycled products. The City would promote these locations in our newsletters and parks brochures as most of these would be installed in heavy recreational use areas. The additional benefits of the rain barrels are that they will help reduce household water consumption and reuse natural rainwater. It is expected that after installation the rain barrels will continue to conserve water resources for many years.

**LOCAL HAZARDOUS WASTE MANAGEMENT PROGRAM  
CITY OF DES MOINES  
2008 SCOPE OF WORK AND BUDGET**

1. PROJECT OVERVIEW:

A) Two Des Moines Recycling Collection Events

B) Event Date: Spring and Fall, 2008

C) Event Hours: 9 am to 3 pm

D) Event Location: Des Moines Marina

E) Project Managers:

|                  |                                                                                                                                                                                                        |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) City Contact: | Dave Steen<br>Planning Aide<br>City of Des Moines<br>21630 11 <sup>th</sup> Ave S, Suite "D"<br>Des Moines, WA 98198<br>Tel - (206) 870-6532<br>Fax - (206) 870-6544<br>Email - dsteen@desmoineswa.gov |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                        |                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2) Outside Consultant: | Olympic Environmental Resources<br>4715 SW Walker Street<br>Seattle, WA 98116<br>TEL - (206) 938-8262<br>FAX - (206) 938-9873<br>Email – pauldevine@msn.com |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

F) Event Activities -materials to be collected:

- 1) Motor Oil
- 2) Motor Oil Filters
- 3) Petroleum Based Products
- 4) Antifreeze
- 5) Lead Acid Batteries
- 6) Household Batteries
- 7) Computer Monitors
- 8) TV Sets
- 9) CFC Appliances

G) Event Educational Activities - the following educational materials will be distributed:

- 1) Information on City recycling programs
- 2) Local Hazardous Waste Management Plan educational materials produced by King County.
- 3) Other appropriate educational materials.

H) Event Promotion-event promotion will be accomplished by one or more of the following ways:

- 1) By distributing a promotional flyer through direct mailings.
- 2) By including notices in City/community newsletters.
- 3) By posting a bulletin at City Hall and on the City cable channel and web site.
- 4) By publicizing the event through the King County promotional activities, including County websites.

I) Total Budget: \$11,459.22

| Estimated Costs                                          | 2008        | 2008        | 2007       | TOTAL       |
|----------------------------------------------------------|-------------|-------------|------------|-------------|
|                                                          | LHWMP       | CPG         | WRR        |             |
| City Staff Salary and Benefits                           | \$1,145.92  | \$1,777.17  | \$900.00   | \$3,823.09  |
| Consultant Services - Management/Staffing/Admin/Graphics | \$3,855.47  | \$12,345.05 | \$2,041.00 | \$18,241.52 |
| Collection/Hauling Costs                                 |             |             |            |             |
| Oil, Filters, and Antifreeze                             | \$2,200.00  | \$0.00      | \$0.00     | \$2,200.00  |
| Batteries                                                | \$500.00    | \$0.00      | \$0.00     | \$500.00    |
| Other Material Costs                                     | \$0.00      | \$0.00      | \$5,584.00 | \$5,584.00  |
| Flyer Printing and Mailing                               | \$2,200.00  | \$2,200.00  | \$0.00     | \$4,400.00  |
| Event Supplies                                           | \$500.00    | \$649.25    | \$0.00     | \$1,149.25  |
| Other Expenses - rentals and mileage, etc                | \$1,057.83  | \$746.03    | \$475.00   | \$2,278.86  |
| TOTALS                                                   | \$11,459.22 | \$17,717.50 | \$9,000.00 | \$38,176.72 |

## 2. PERFORMANCE OBJECTIVES:

The City plans to send out approximately 8,000 promotional flyers to Des Moines households per event and publicize the event through King County promotional activities, including County websites and telephone assistance. The City anticipates collecting 17-22 tons of material from the local waste stream.

The expected volumes of material collected, based on past events, are as follows:

| <u>Type of Material</u>           | <u>Total Volume</u> |
|-----------------------------------|---------------------|
| Antifreeze                        | 100-150 gallons     |
| Lead Acid Batteries               | 100-120             |
| Used Motor Oil/Petroleum Products | 450-600 gallons     |
| Used Oil Filters                  | 75-100              |



|                     |             |
|---------------------|-------------|
| Household Batteries | 4,500-5,500 |
| Computer Monitors   | 200-220     |
| TV Sets             | 150-200     |
| CFC Appliances      | 40-50       |

The benefits expected by the collection of these materials will be to divert them from the waste stream where they could damage the environment and pose health risks to Des Moines residents. The volume of materials collected and diverted will be reported to the King County Health Department at the conclusion of the events. These events will also provide an opportunity to recycle solid waste. The King County Solid Waste Division and Washington State Department of Ecology will pay for the solid waste element.

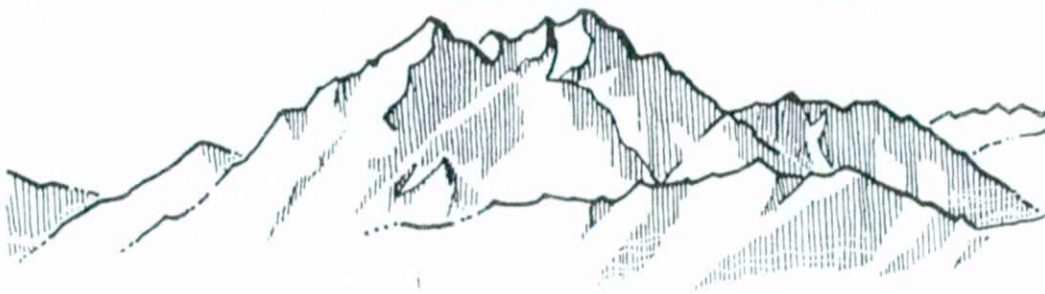
### 3. IMPACT OBJECTIVES:

By hosting two Recycling Collection Events, Des Moines can further reduce the amount of environmentally damaging materials finding their way to the landfills, storm drains, streams, and other isolated sites in our City. The City of Des Moines has a population of roughly 29,000. The City expects, based on past events, that 900-1,100 households will actively participate in the events by bringing the materials listed above to the events for proper disposal and recycling. This will result in 17-22 tons of material diverted from the local waste stream for recycling.

In addition to diverting materials from the City waste stream, attracting residents to these events provides an opportunity to distribute educational materials on City recycling programs and the Local Hazardous Waste Management Plan in King County. The educational materials can enhance the knowledge of residents and improve behavior in purchase, handling, and disposal of hazardous materials.

Des Moines will provide the following information to the County for project evaluation:

- 1) The number of participating vehicles.
- 2) The volume of each material collected.
- 3) Actual event cost by budget category.
- 4) Documentation of the materials collected for recycling by the respective service provider.



## *Olympic Environmental Resources*

4715 SW Walker Street Seattle, WA 98116

Tel. (206) 938-8262 Fax (206) 938-9873

Email: PaulDevine@MSN.com

February 2, 2008

Mr. Dave Steen  
Planning Aide  
Planning, Building and Public Works  
City of Des Moines  
21630 11th Ave. S., Suite D  
Des Moines, WA 98198

RE: City of Des Moines Request for Proposals

Dear Mr. Steen:

Olympic Environmental Resources (OER) is pleased to respond to the City of Des Moines Request for Proposals for implementation of Des Moines recycling programs in 2008 and 2009. OER has direct experience managing Des Moines waste reduction and recycling programs and has a clear understanding of City needs, programs, and the grant administration experience necessary to assist your City. OER also has the vendors and contacts in place to implement 2008 programs immediately.

OER has proven expertise in solid waste management and the ability to procure and execute government grants. Since 1991, OER's staff have been organizing and operating municipal collection events throughout King County. This has included management of collection event vendors, coordinating vendor insurance coverage's and hold harmless agreements to protect OER City clients, and preparing collection reports and reimbursement requests for the program grantors and cities. OER has extensive experience in coordinating collection and transport or recyclable and hazardous waste.

Attached please find the following:

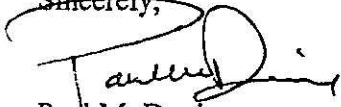
1. Written understanding of the project.
2. A one-page summary of project tasks, including timelines, personnel and expenses.
3. Summary of qualifications of individuals directly working on the events.

**ATTACHMENT 4**

4. List of similar projects completed for other agencies with contact information.
5. An example of work that best reflects the consultant's ability to complete this project – a 2007 Des Moines Fall Recycling Collection Event flyer.

It has been a pleasure assisting the City of Des Moines with all aspects of your waste reduction and recycling programs during the past twelve years. Thank you for your consideration of OER's proposal. Please contact me at (206) 938-8262 if you have questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul M. Devine", written over a horizontal line.

Paul M. Devine  
General Manager  
Olympic Environmental Resources

enclosures

## Written Understanding of the Project

In 1993, OER General Manager met with Des Moines City staff to discuss grant programs available to Des Moines. The grant programs were being used in other King County cities to enhance recycling activities and provide useful services to City businesses and residents. Des Moines City staff was interested in additional programs but requested that City staff time on recycling projects be kept at a low level because of other time commitments. City staff liked the idea of a turnkey approach to programs that would "unburden" City staff of grant applications, program implementation activities, grant administration, program evaluation, and reporting responsibilities. City staff specified that only fully grant-funded projects would be of interest to the City, as they would not impact City general funds. City staff also suggested that additional programs be sought out if they fit into these criteria.

With the knowledge and connections gained through working as a former King County Suburban City Planner/Recycling Coordinator, OER General Manager assisted Des Moines in applying for King County grants to host a Recycling Collection Event in 1993. Since 1993, Des Moines has held one or more Recycling Collection Events annually, serving nearly 9,000 City residents and diverting over 2,777,000 pounds of material. In addition, grant funds have been used to host the Des Moines Business Recycling Collection Event, prepare and distribute the *Des Moines Guide to Recycling*, sell compost bins and rain barrels, and purchase and distribute recycling promotional items such as reusable lunch bags, coffee mugs, and recycled content pens.

In 2008 and 2009, OER staff will build on the success of these programs. OER staff will coordinate all facets of City recycling programs with City staff. OER services will include writing grant proposals, implementing projects, preparing program evaluation reports, and completing grant reimbursement requests. OER's experience in organizing and operating municipal collection events, the ability to work with City staff, collection vendors, and prepare collection reports and reimbursement requests for the grantors and the City will allow the City of Des Moines to implement successful recycling programs in 2008 and 2009. OER and its subcontractors are committed to being efficient, responsive, and cost effective and have extensive experience in collecting, transporting, and recycling the items the City has listed in the request for proposals.



# Summary of project tasks, including timelines, personnel, and expenses

## TASK ONE – Residential Recycling Collection Events

In 2008 and 2009, Olympic Environmental Resources (OER) will implement one spring and one fall Residential Recycling Collection Event. A total of four events will be implemented. Event hours will be 9:00 a.m. to 3:00 p.m. The parking lot at the Des Moines Marina or other suitable location will be the site of the events. Materials collected at the events will be bulky wood; CFC appliances\*; ferrous and non-ferrous metals\*; reusable clothing; reusable household goods; tires\*; petroleum-based products and oil filters; antifreeze; lead acid batteries; porcelain toilets and sinks\*; concrete, asphalt, rock, and brick; cardboard; propane tanks\*; cellular phones; electronic and computer equipment\*; and TV sets\*.

Schedule – 2008 and 2009 – Spring Event – March, April, or May; Fall Event - October.

Personnel/Subcontractors – Olympic Environmental Resources staff, Bradshaw's Environmental Resources, Inc, American Petroleum Environmental Services, Inc., All Battery Sales and Service, Tire Disposal and Recycling, Seattle Goodwill, Glacier Recycle LLC, Total Reclaim, Inc., Ecolights Northwest, as well as flyer production and supply and rental vendors.

Cost: \$70,503.63

| Estimated Costs                    | 2008        | 2009        | TOTAL       |
|------------------------------------|-------------|-------------|-------------|
| Management/Staffing/Admin/Graphics | \$13,850.00 | \$14,000.00 | \$27,850.00 |
| Event Staff Costs                  | \$4,500.00  | \$4,600.00  | \$9,100.00  |
| Collection/Hauling Costs           |             |             |             |
| Wood Waste*                        | \$800.00    | \$800.00    | \$1,600.00  |
| Scrap Metal, Appliances, etc.      | \$2,500.00  | \$2,500.00  | \$5,000.00  |
| Concrete*                          | \$1,200.00  | \$1,200.00  | \$2,400.00  |
| Tires                              | \$1,200.00  | \$1,200.00  | \$2,400.00  |
| Used Oil/Antifreeze                | \$2,200.00  | \$2,200.00  | \$4,400.00  |
| Batteries                          | \$500.00    | \$500.00    | \$1,000.00  |
| Printing/Mailing**                 | \$4,400.00  | \$4,400.00  | \$8,800.00  |
| Event Supplies                     | \$1,203.63  | \$1,250.00  | \$2,453.63  |
| Other Expenses - rentals, etc      | \$2,500.00  | \$3,000.00  | \$5,500.00  |
| TOTALS                             | \$34,853.63 | \$35,650.00 | \$70,503.63 |

\*OER proposes that wood waste be collected in the spring only and concrete be collected in the fall only.

\*\*Event flyers will be sent to all Des Moines single-family households.

## TASK TWO – Business Recycling Collection Events

In 2008 and 2009, OER will implement one summer Business Recycling Collection Event. A total of two events will be implemented in conjunction with the cities of Burien and City of Normandy Park. Event hours will be 10:00 a.m. to 2:00 p.m. The parking lot at the WA Criminal Justice Training Center will be the location of the events. Materials collected at the event will be clean scrap wood/pallets; electronic/computer equipment; computer monitors\*; fluorescent lights; office recyclables/cardboard; toner cartridges; cellular phones; plastics; and TV sets\*.

Schedule – 2008 event – July/August 2008. 2009 event – July/August 2009.

Personnel/Subcontractors – Olympic Environmental Resources staff, Bradshaw's Environmental Resources, Inc, Glacier Recycle LLC, Total Reclaim, Inc., Ecolights Northwest, as well as flyer production and supply and rental vendors.

Cost: \$9,000.00

| ESTIMATED COSTS                         | 2008 Cost  | 2009 Cost  | Total      |
|-----------------------------------------|------------|------------|------------|
| Administration and Supplies             | \$300.00   | \$300.00   | \$600.00   |
| Consultant and Contractor Services      | \$4,000.00 | \$4,000.00 | \$8,000.00 |
| Flyer - Printing and Distribution Costs | \$200.00   | \$200.00   | \$400.00   |
| Total                                   | \$4,500.00 | \$4,500.00 | \$9,000.00 |

\*The consultant/subcontractors will be able to charge a user fee to offset the cost of collecting and recycling these items.

NOTE: A rain barrel sale has not been included in the OER proposal as the budget allocation had not been determined. OER will implement the rain barrel sale at the direction of the City. It is expected that if a rain barrel sale is held it will be held in conjunction with a spring or fall Residential Recycling Collection Event.

## **Summary of Qualifications of Individuals Directly Working on the Events**

Olympic Environmental Resources (OER) proposes to handle event planning and coordination with Des Moines staff, event contractors, and material collection and/or processing subcontractors as necessary. OER staff shall be responsible for overall event planning, coordination, management, project reporting, and grant administration for each event. By working with King County cities, many for fifteen years, OER staff has demonstrated the ability to deliver successful event management services on schedule and within budget. OER services shall include scheduling events, organizing OER project staff, coordinating events with OER subcontractors, and providing event reporting and grant administration. OER staff shall meet with City staff at the City's discretion to ensure proper operation of each event.

### **Project Staffing and Management**

OER shall provide adequately trained staff for each event. OER staff is experienced and familiar with recycling events and very customer service oriented. A sufficient number of OER staff shall be present to prevent traffic delays and to address participant's needs and questions. OER will provide each Des Moines event with the following staff:

- 1) A Project Manager to work with Des Moines, provide contract management, supervise staff and oversee operations of the entire contract. The Project Manager shall ensure the contract is completed on time and within budget. The Project Manager will also work at events as necessary.

Paul Devine will act as the Project Manager. Paul has successfully managed Des Moines Recycling Collection Events for the past twelve years. Paul is experienced in all aspects of collection event management and has acted in every working capacity at events. Paul's experience in managing Des Moines recycling programs makes him uniquely qualified to manage Des Moines Recycling Collection Events.

Paul has extensive experience in solid waste and recycling and both in the public and private sector. As a King County Suburban City Recycling Coordinator for the City of Normandy Park he designed and implemented a comprehensive Solid Waste Management Plan. As General Manager of OER, he has developed good working relationships with area haulers, local recyclers, state, and local governments officials. Paul graduated from Whitman College in 1984 and received a Master's of Public Administration from Seattle University in 1990.

- 2) An Event Coordinator to supervise staff and oversee operations of entire event. The event coordinator shall ensure that site entrance greeters, traffic directors, exit staff, and fee collectors are supervised throughout the day.

Tom Sharp, Tim Greenan, Mike Smyth, and Jay Brewer will work for OER as event coordinators on Des Moines events. Tom, Tim, Mike, and Jay have all worked at Des Moines events over the past fifteen years on both residential and business events. Tom is a Master Recycler/Composter and former King County Suburban City Recycling Coordinator for the City of Normandy Park. All event coordinators are experienced working with event subcontractors and implementing events. All are experienced and skilled in assisting the event participants and providing information on reducing waste, reusing materials, and recycling.

3) Site Entrance Greeters to screen vehicles for proper materials, answer questions about event procedures, and direct participants to materials collection stations. Greeters shall distribute educational materials and promotional items as requested by the City.

Treloar Nyquist and Marilyn Frank have worked with OER for many years. All are experienced at greeting event participants, directing event traffic, providing educational materials, passing out promotional items, and tallying the number of participants that attend events. All are experienced and skilled at making participants feel welcome to events while giving event directions and relaying important safety information

4) Material Collection Staff to offload materials. Mat Vlasak, Mike Brawley, Karl Ruediger, Spencer Orman, and Rich Arzberger will work as material collection staff for OER. All are experienced in working events and collecting different recyclable materials and have worked with OER for a number of years.

In addition to OER staff, event subcontractors provide staff to collect other materials such as motor oil, batteries, tires, household goods, scrap metal, and electronics.



## **List of Similar Projects Completed for other Agencies with Contact Information.**

Olympic Environmental Resources (OER) specializes in solid waste and recycling services and special collection event management. OER staff has over a decade of special collection event management experience and strong expertise in the areas of planning and coordinating one-day collection events for reusing and recycling the kinds of materials listed in the Des Moines Request For Proposals (RFP). OER staff has worked on King County suburban City recycling programs since 1990. OER is ready and able to provide Des Moines with professional program management, implementation, and administration. OER offers unmatched experience and expertise to complete this project on time and within budget. That experience is necessary to manage Des Moines events so that they will be implemented without delays or problems and Des Moines staff can feel comfortable that they will be done right!

**Currently OER is providing special collection event management services for:**

City of Algona – Diana Quinn - (253) 833-2897  
City of Bellevue - Tom Spille – (425) 452-6964  
City of Black Diamond - Brenda Streepy – (253) 631-0351  
City of Covington – Shellie Bates – (253) 638-1110 - Ext. 2238  
City of Enumclaw – Vickie Forler – (360) 825-3593  
City of Kenmore – Ted Carlson – (425) 398-8900  
City of Kent – Robyn Bartelt – (253) 856-5549  
King County Solid Waste Division – Karen May – (206) 296-4353  
City of Kirkland – John MacGillivray – (425) 587-3804  
City of Mercer Island – Glenn Boettcher – (206) 236-5329  
City of Maple Valley – Diana Pistol – (425) 413-8800  
City of Newcastle - Brian Smith - (425) 649-4444 - Ext 136  
City of Normandy Park/Burien - Janise Goucher – (206) 248-7603  
City of Pacific – Jay Bennett – (253) 929-1113  
City of Sammamish – Sara Ninteman – (425) 295-0515  
City of Skykomish - Christina Yates - (360) 677-2388  
City of Tukwila – Nick Olivas – (206) 575-4407

**The following services are required to coordinate and manage recycling collection events for the above clients:**

- Coordinate with City staff and vendors
- Secure all necessary permits for event site use and those necessary for handling, hauling and recycling/disposal of materials collected at the event
- Develop promotional materials including design, printing and mailing to City residents/businesses via direct mail
- Prepare event site maps for smooth flow of traffic
- Provide staff to run the event
- Distribute promotional and educational materials to event participants



- Provide equipment, signage, and supplies at events
- Oversee collection and transport of collected materials
- Ensure that all equipment and debris is removed from the event site and that it is left at its pre-event condition
- Report collection data to each City
- Prepare grant project reports and reimbursement request with granting agencies
- Prepare Collection Events/Mobile Collections Reports for the King County Health Department and WA State Department of Ecology.
- Prepare annual grant reports for City recycling grants.
- Prepare annual or bi-annual grant applications for City recycling grants.

**Upon completion of each event, OER prepares written reports and reimbursement requests for the grantors and the City in the format required by each agency. Each report includes the following:**

- Number of participants (vehicles)
- Volume of each material collected (e.g. gallons, tons, pounds)
- Compare event results (i.e., volume of collected material and number of participants) to previous events
- Breakdown actual event costs by budget category
- Receipts for all services and supplies for the event

### **Olympic Environmental Resources References**

**Ms. Diana Pistoll**  
**Programs Coordinator**  
**City of Maple Valley**  
**PO Box 320**  
**Maple Valley, WA 98038**  
**TEL (425) 413-8800**

**Ms. Robyn Bartelt**  
**Conservation Specialist**  
**City of Kent**  
**220 4th Ave. South**  
**Kent, WA 98032-5895**  
**TEL (253) 856-6549**

**Ms. Vicki Forler**  
**Public Works Department**  
**City of Enumclaw**  
**2041 Railroad Street**  
**Enumclaw, WA 98022**  
**TEL (360) 825-3252**



# Recycling Collection Event

October 27, 2007 9am to 3pm  
at the Des Moines Marina

## Items Must Meet the Following Guidelines.....



You Can  
Bring...

- **TIRES:** Bias ply, steel belted, and studded tires accepted. Limit 6 tires per household (18 inches and below) free of charge. \$1.50 charge for each tire on a rim. \$5 charged for each large truck tire and \$15 charged for each truck tire on rim (cash only). No oversized tires accepted.
- **MOTOR OIL, FILTERS, & ANTIFREEZE:** Motor oil, oil filters, antifreeze, brake fluid, transmission fluid, 2-cycle oil, steering fluid, crankcase oil, kerosene, and home heating fuel. Do not mix with antifreeze, solvents, gasoline, or other substances.



**LEAD ACID BATTERIES:** Car, truck, marine, and motorcycle batteries accepted.

**ALKALINE BATTERIES:** AAAA, AAA, AA, A, B, C, and D cell batteries only.

**CARDBOARD:** Please flatten. No wax coated cardboard.

**PROPANE TANKS:** Residential tanks only. \$5 charge (cash only).

**HOUSEHOLD GOODS AND CLOTHING:** Clothing and miscellaneous household items in good condition. No mattresses accepted. No furniture accepted. No items in need of repair will be accepted.

**PORCELAIN TOILETS AND SINKS:** Toilet seats, hardware, and base wax rings must be removed. \$5 charge (cash only).

**APPLIANCES AND SCRAP METAL:** Auto parts, engines and gas lawnmowers (drained of oil and gasoline), metal lawn chairs, stoves, barbecues, iron, steel, aluminum, brass, copper and other ferrous and nonferrous metals. \$5 will be charged for each water heater that still has insulation coating (cash only). Metals that are insulated, rubber or oil coated, previously or currently contain chemicals, paint, or hazardous materials will not be accepted. No light fixture ballasts or sealed drums accepted.



- **REFRIGERATORS/FREEZERS:** \$25 will be charged for each refrigerator or freezer \$25 will be charged for each household air conditioner (cash only).
- **CONCRETE, ASPHALT, ROCK, AND BRICK:** Residential material only. No wood or metal attached. Please lay a tarp under material for ease of removal. Rocks and smaller concrete pieces must be in boxes or five-gallon buckets for easy removal. Concrete mix material must be removed from bags.
- **ELECTRONIC EQUIPMENT:** Computers, printers, mouse, keyboards, copiers, fax machines, scanners, and cellular phones. Computer monitors will be collected for \$10 each (cash only).
- **TELEVISION SETS:** TV sets with 36 inch or smaller screens and encased in plastic - \$20 charge (cash only). TV sets with larger than 36 inch screens, wood console, sets encased in wood, and big screen TV sets - \$25 charge (cash only). Projection TV sets - \$30 charge (cash only).



Bulky yard waste and scrap wood will not be collected at this event but will be collected at a similar event next spring. No flat beds or dump trucks allowed. We reserve the right to refuse oversized, commercial, contaminated, excessive or unacceptable loads.

## DON'T BRING!



These household wastes:

- No scrap/bulky wood
- No construction/demolition debris
- No garbage
- No mattresses/furniture
- No plastic toys, hoses, etc.
- No window glass

These hazardous wastes:

- No paint
- No pesticides/herbicides
- No solvents and thinners
- No household chemicals
- No cleaning products
- No fluorescent lights



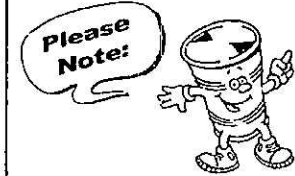
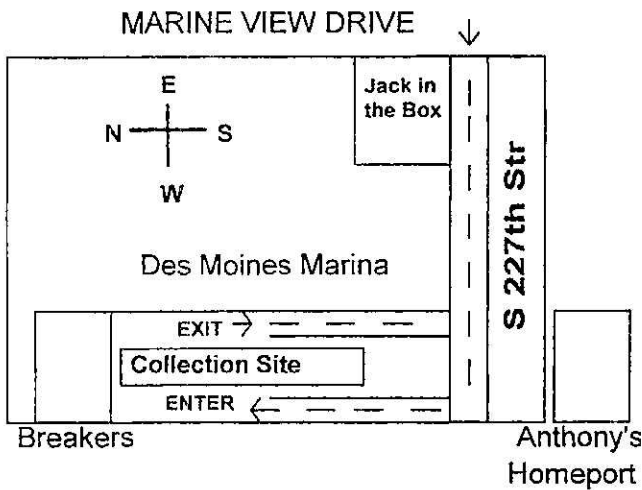
Household Hazardous Wastes can be taken to the Household Hazardous Wastemobile or one of three household hazardous waste collection sites. Des Moines residents may use the South Seattle Household Hazardous Waste Facility - 8105 5<sup>th</sup> Avenue South, Seattle. Open 9:30 am - 4:30 pm, Thursday, Friday, and Saturday (except holidays). Volume restrictions apply.

For more information about volume restrictions and other household hazardous waste disposal options visit [www.govlink.org/hazwaste/house/disposal/](http://www.govlink.org/hazwaste/house/disposal/) or call the Household Hazards Line Monday to Friday 9 a.m. to 4:30 p.m. except holidays at (206) 296-4692.

For more event information call  
Des Moines City Hall  
(206) 870-6532

Alternative formats or disability  
accommodations on request. TTY Relay: 711.

# Location Map Des Moines Marina



No flat beds or dump trucks allowed. We reserve the right to refuse oversized, commercial, contaminated, excessive or unacceptable loads.

## Acknowledgments

The City of Des Moines  
The Des Moines Marina  
Seattle Goodwill

## Funding Provided By

The Local Hazardous Waste  
Management Program in King County  
The King County Solid Waste Division  
The WA State Dept. of Ecology

Printed on Recycled Paper. Please Recycle.

Prsrt STD  
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Seattle, WA  
Permit # 816

City of Des Moines  
21630 11th Ave S, Suite "D"  
Des Moines, WA 98198  
[www.desmoineswa.gov](http://www.desmoineswa.gov)



Postal Customer

### RAIN BARRELS

To encourage the use of recycled content material and more efficient use of water, the City of Des Moines is offering recycled plastic rainbarrels at a substantial discount.

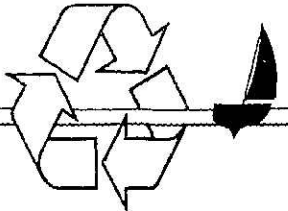
Available at this event while supplies last - \$25.00 each.

2007 Fall Recycling Collection Event

October 27, 2007

# City of Des Moines Fall Recycling Collection Event

*Des Moines Sails  
Through Recycling*



## When:

Saturday, October 27, 2007

9:00 am - 3:00 pm

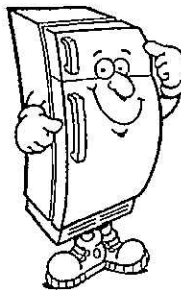
No vehicles may enter after 3 pm.

## Where:

Des Moines Marina  
South end of Marina  
Just off 227th Ave.



- Tires
- Motor Oil & Filters
- Antifreeze
- Lead Acid Batteries
- Household Batteries
- Cardboard
- Propane Tanks
- Household Goods & Clothing
- Porcelain Toilets & Sinks
- Appliances & Scrap Metal
- Refrigerators & Freezers
- Concrete, Asphalt, Rock, & Brick
- Electronic Equipment
- TV Sets





**Dave Steen**

---

**From:** Shallow, Paul [Paul.Shallow@kingcounty.gov]  
**Sent:** Thursday, October 04, 2007 2:03 PM  
**To:** Dave Steen  
**Cc:** Paul Devine; Robert Ruth; Grant Fredricks  
**Subject:** RE:

Dear Mr. Steen,

It was nice to meet you this morning. Thank you for the City of Des Moines's 2008 Local Hazardous Waste Management Program scope of work and budget application. I have processed your application and a contract will be sent to you towards the end of 2007 by Jeff Brown of Contracts. I look forward to working with you and Mr. Devine in 2008.

Sincerely,

Paul Shallow  
Suburban Cities Contract Administrator  
Local Hazardous Waste Management Program in King County  
Public Health, Seattle & King County.

---

**From:** Dave Steen [mailto:DSteen@desmoineswa.gov]  
**Sent:** Thursday, October 04, 2007 8:24 AM  
**To:** Shallow, Paul  
**Cc:** Paul Devine; Robert Ruth; Grant Fredricks  
**Subject:**

<<2008 DM HD SCOPE.doc>>

Mr. Shallow,

Attached is the City of Des Moines' 2008 Local Hazardous Waste Management Program Grant Scope of Work and Budget. Thank you for the Local Hazardous Waste Management Plan Grant. We look forward to working with you in 2008.

*Dave Steen, Planning Aide  
Planning, Building and Public Works  
City of Des Moines  
21630 11th Ave. S., Suite D  
Des Moines, WA 98198  
Ph. 206-870-6532  
Fax 206-870-6544*

**ATTACHMENT 5**

02/19/2008



**From:** Shallow, Paul [Paul.Shallow@kingcounty.gov]

**Sent:** Tuesday, January 08, 2008 2:56 PM

**To:** Amanda Thompson; Amy Ensminger; Brenda Streepy; Brian Smith ; Christina Yates; Dave Steen; Desmond Machuca; Diana Pistoll; Diana Quinn; Erin Leonhart; Gina Hungerford; Glenn Boettcher; Janise Goucher; Jay Bennett; Jerome Jin; Jodi Lee Wycoff; Kathleen Edman; Kirsten Weinmeister; Leslie Harris; Linda Knight; Nick Olivas; Pandora Touart; Rika Cecil; Rob Van Orsow; Sara Ninteman; Shellie Bates; Tema Nesoff; Tom Spille; Valerie Stuart; Vickie Forler

**Cc:** Cadigan, Helen; Brown, Jeffrey

**Subject:** 2008 Local Hazardous Waste Management Program Contracts

G'day All,

A happy New Year to you all.

Public Health, Seattle and King County is using a new software program for all contracts beginning in 2008. The implementation of this new software has caused a delay in processing the 2008 contracts which will be new contracts, not amendments to the 2007 contracts. Also, Helen Cadigan has replaced Jeffrey Brown in managing the Local Hazardous Waste Management Program (LHWMP) contracts.

It is anticipated that your 2008 LHWMP contract will be sent to you by the end of January, 2008. We apologize for the delay in sending you your contract and hope that this delay does not cause you any inconvenience.

Please email me or contact me at (206) 263-8487 if you have further questions.

Thanks Paul.

Paul Shallow

Suburban Cities Contract Administrator

Local Hazardous Waste Management Program in King County

Public Health, Seattle & King County.

## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Ecology Stormwater Grant  
Agreement (Revised) – NPDES  
Program

AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Planning, Building & Public  
Works

ATTACHMENTS:

1. Attorney General revised Section F (with  
tracked changes)
2. Updated Agreement

DATE SUBMITTED: February 19, 2008

CLEARANCES:

[ ] Finance \_\_\_\_\_  
[ X ] Planning Building & Public Works MA  
[ X ] Legal PB

APPROVED BY CITY MANAGER  
FOR SUBMITTAL: AT

**Purpose and Recommendation:**

The purpose of this agenda item is to approve the revised State Department of Ecology Grant Agreement. As part of the 2007-09 state budget, the Department of Ecology has offered to Des Moines a \$75,000 grant to assist funding in the development, implementation, and management of the City's National Pollution Discharge Elimination System (NPDES) program. Staff recommends accepting this grant as it can be used for a variety of expenses related to meeting the requirements of the NPDES Phase II permit that the City's stormwater program is now operating under. The grant does not require a local funding match and costs are eligible for funding from July 1, 2007 through June 30, 2009.

**Suggested Motion:**

"I move to approve the revised Local Government Stormwater Grant No. G0800130 between the Washington State Department of Ecology and the City of Des Moines, and further to authorize the City Manager to sign said agreement in the form as attached."

**Background:**

In June of 2007, the City received a \$75,000 grant offer from Ecology as part of the state's new Local Government Stormwater Grants Program under the Local Toxics Account. The 2007 Washington Legislature provided \$9 million for this program for the purpose of assisting local governments throughout the state for implementation of Phase II NPDES permits.

On November 8, 2007, the City Council approved the Grant Agreement with an amendment deleting all of Section F: Minority and Women's Business (MWBE) Participation of page 6 and 7 of the agreement.

## Minority And Women's Business (MWBE) Participation

The RECIPIENT agrees to solicit and recruit, to the extent possible, certified minority-owned (MBE) and women-owned (WBE) businesses in purchases and contracts initiated after the effective date of this agreement.

Contract awards or rejections cannot be made based on MBE or WBE participation. M/WBE participation is encouraged, however, and the RECIPIENT and all prospective bidders or persons submitting qualifications should take the following steps, when possible, in any procurement initiated after the effective date of this agreement:

- a. Include qualified minority and women's businesses on solicitation lists.
- b. Assure that qualified minority and women's businesses are solicited whenever they are potential sources of services or supplies.
- c. Divide the total requirements, when economically feasible, into smaller tasks or quantities, to permit maximum participation by qualified minority and women's businesses.
- d. Establish delivery schedules, where work requirements permit, which will encourage participation of qualified minority and women's businesses.
- e. Use the services and assistance of the State Office of Minority and Women's Business Enterprises (OMWBE) and the Office of Minority Business Enterprises of the U.S. Department of Commerce, as appropriate.

The RECIPIENT shall report to the DEPARTMENT at the time of submitting each invoice, on forms provided by the DEPARTMENT, payments made to qualified firms. Please include the following information:

a. Name and state OMWBE certification number (if available) of any qualified firm receiving funds under the invoice, including any sub-and/or sub-subcontractors.

b. The total dollar amount paid to qualified firms under this invoice

Deleted: maximum

Deleted: In the absence of more stringent goals established by the RECIPIENT's jurisdiction, the RECIPIENT agrees to utilize the DEPARTMENT'S goals for minority- and women-owned business participation in all bid packages, request for proposals, and purchase orders. These goals are expressed as a percentage of the total dollars available for the purchase or contract and are as follows:¶

|                           |        |
|---------------------------|--------|
| Construction/Public Works | 10%    |
| MBE                       | 6%WBE¶ |
| Architecture/Engineering  | 10%    |
| MBE                       | 6%WBE¶ |
| Purchased Goods           | 8%     |
| MBE                       | 4%WBE¶ |
| Purchased Services        | 10%    |
| MBE                       | 4%WBE¶ |
| Professional Services     | 10%    |
| MBE                       | 4%WBE¶ |

¶ Meeting these goals is voluntary and no

Deleted: c

Deleted: shall

Deleted: achievement or non-achievement of the goals.

Deleted: Achievement of the goals

Deleted: ALL

Deleted: all

Deleted: affirmative

Deleted: A

Deleted: By signing this Agreement, the RECIPIENT certifies that the above steps were, or will be followed. Any contractor engaged by the RECIPIENT under this agreement shall be required to follow the above five affirmative steps in the award of any subcontract(s).¶

Comment [LL1]: We'd like to keep the reporting requirement so we can get credit for \$ spent on M/WBE firms through Ecology grants.

Deleted: The report will address

Deleted: voucher

Des Moines Local Government Stormwater Grant  
City of Des Moines  
Grant No. G0800130

DEPARTMENT Funding Source: **2007-09 Biennial Operating Budget/Local Toxics Control Account**

Total Cost: **\$75,000**

Total Eligible Cost: **\$75,000**

DEPARTMENT Share: **\$75,000**

DEPARTMENT Maximum Percentage: **100 percent**

The effective date of this grant agreement is July 1, 2007. Any work performed prior to the effective date of this agreement will be at the sole expense and risk of the RECIPIENT.

This agreement shall expire on **June 30, 2009**.

## **PART II. PERFORMANCE MEASURES**

### **A. Water Quality Goal.**

Improved stormwater management and water quality protection associated with development and implementation of a stormwater management program.

### **B. Project Outcomes.**

Local Government Stormwater Grants for local governments to receive grants for municipal stormwater programs, including but not limited to:

1. Implementation of Phase II municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.
2. Stormwater source control for toxics in association with clean-up of contaminated sediment sites.
3. Stormwater source control programs for shellfish protection districts where stormwater is a significant contributor.

### **C. Post Project Assessment.**

The RECIPIENT agrees to submit a brief survey three years after project completion regarding the key project outcomes and the status of environmental results or goals from the project. The DEPARTMENT's Performance Measures Lead will e-mail the RECIPIENT the Post Project Assessment Survey.

The DEPARTMENT may conduct on-site interviews and inspections, and may otherwise evaluate the Project. The DEPARTMENT will enter the information provided into its performance measures database to be provided to the Washington State Legislature, United States Environmental Protection Agency, and other natural resource agencies.



Approximate Post Project Assessment Date: June 30, 2012

### PART III. PROJECT DESCRIPTION

The RECIPIENT's stormwater project will address planning, implementation, or management of municipal stormwater programs.

### PART IV. PROJECT BUDGET

| Des Moines Local Government Stormwater Grant                                   |                            |
|--------------------------------------------------------------------------------|----------------------------|
| ELEMENTS                                                                       | TOTAL ELIGIBLE COST (TEC)* |
| Task 1 – Project Administration/Management                                     | \$ 7,500                   |
| Task 2 – Implementation of Stormwater Planning and Management Needs            | \$67,500                   |
| Total                                                                          | \$75,000                   |
| *The DEPARTMENT's Fiscal Office will track to the Total Eligible Project Cost. |                            |
| MATCHING REQUIREMENTS (There are no matching requirements)                     |                            |
| DEPARTMENT Share FY 08 (100% of TEC)                                           | \$75,000                   |

Payment Request Submittals. Payment requests will not be submitted more often than monthly, unless allowed by the DEPARTMENT's Project/Financial Manager. The DEPARTMENT's Project/Financial Manager may require the RECIPIENT to submit regular payment requests to ensure efficient and timely use of funds.

Payment Schedule. Payments will be made on a cost-reimbursable basis.

### PART V. SCOPE OF WORK

The RECIPIENT shall ensure that this project is completed according to the details of this agreement. The RECIPIENT may elect to use its own forces or it may contract for professional services necessary to perform and complete project related work. The RECIPIENT certifies by signing this agreement that all applicable requirements have been satisfied in the procurement of any professional services. Eligible and ineligible project costs are separate and identifiable for

billing purposes. If professional services are contracted, the RECIPIENT shall submit a copy of the final contract to the DEPARTMENT's Project/Financial Manager.

**Task 1 - Project Administration/Management**

- A. The RECIPIENT shall administer the project. Responsibilities will include, but not be limited to: maintenance of project records; submittal of payment vouchers, fiscal forms, and progress reports; compliance with applicable procurement, contracting, and interlocal agreement requirements; application for, receipt of, and compliance with all required permits, licenses, easements, or property rights necessary for the project; and submittal of required performance items.
- B. The RECIPIENT shall manage the project. Efforts will include: conducting, coordinating, and scheduling project activities and assuring quality control. Every effort will be made to maintain effective communication with the RECIPIENT's designees; the DEPARTMENT; all affected local, state, or federal jurisdictions; and any interested individuals or groups. The RECIPIENT shall carry out this project in accordance with any completion dates outlined in this agreement.
- C. The RECIPIENT shall submit all invoice voucher submittals and supportive documentation, to the DEPARTMENT's Project/Financial Manager. Copies of all applicable forms shall be included with an original A19-1A, and shall be submitted the DEPARTMENT. Blank forms are found in Administrative Requirements for Recipients of Ecology Grants and Loans.

**Required Forms:**

Form A19-1A (original signature)  
Form B2 (ECY 060-7)  
Form C2 (ECY 060-9)  
Form D (ECY 060-11)

**Where Eligible Costs Have Incurred:**

Form E (ECY 060-12)  
Form F (ECY 060-13)  
Form G (ECY 060-14)  
Form H (F-21)  
Form I (ECY 060-15)

- D. If work conducted results in a report, the RECIPIENT shall submit the following to the DEPARTMENT's Project/Financial Manager and in the quantities identified:
- Draft project completion reports – one electronic copy
  - Final project completion reports – five copies
  - Electronic copy of final project completion report

The RECIPIENT shall submit two copies of any document(s) which requires DEPARTMENT approval. Once approval is given, one copy will be returned to the RECIPIENT. If the RECIPIENT needs more than one approved copy, the number of submittals should be adjusted accordingly.

**Task 2 – Implementation of Stormwater Planning and Management Needs**

- A. The RECIPIENT shall address stormwater management needs that protect or restore water quality. The RECIPIENT may conduct work related to any of the following eligible stormwater management outcomes:
- Implementation of activities required by the municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.
  - Stormwater source control for toxics in association with clean-up of contaminated sediment sites.
  - Stormwater source control programs for shellfish protection districts where stormwater is a significant contributor.
- B. Examples of eligible projects or project components:
1. Conducting inventories of stormwater sources.
  2. Establishing and refining stormwater utilities, including stable rate structures, developing stormwater ordinances and regulations, initial staffing, and other capacity building activities to facilitate ongoing stormwater management needs.
  3. Review existing and model stormwater regulations.
  4. Mapping or geographic information systems of stormwater system infrastructure.
  5. Source control activities, such as drain stenciling, business inspections, and public information and communication.
  6. Identification and removal of illicit stormwater discharges into municipal separate storm sewer systems.
  7. Completing detailed plans, for example, stormwater management plans, engineering reports or facilities plans (including financing options and choices), education and outreach plans, and source control progress reports.
  8. Purchase of equipment for conducting stormwater monitoring.
  9. Evaluation of stormwater quality.
  10. Other activities consistent with Legislative provisos for this program or local and regional stormwater management programs or permit compliance, which can be completed by the June 30, 2009, deadline.

**PART VI. SPECIAL TERMS AND CONDITIONS**

- A. Commencement of Work. In the event that the RECIPIENT fails to commence work on the project funded herein within four months after the effective date of this agreement, or by any date mutually agreed upon in writing for commencement of work, the DEPARTMENT reserves the right to terminate this agreement.
- B. DEPARTMENT Funding Recognition. The RECIPIENT shall acknowledge and inform the public about DEPARTMENT funding participation in this project as appropriate.

## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Ecology Stormwater Grant  
Agreement (Revised) – NPDES  
Program

AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Planning, Building & Public  
Works

ATTACHMENTS:

1. Attorney General revised Section F (with  
tracked changes)
2. Updated Agreement

DATE SUBMITTED: February 19, 2008

CLEARANCES:

[ ] Finance \_\_\_\_\_  
[ X ] Planning, Building & Public Works AA  
[ X ] Legal pb

APPROVED BY CITY MANAGER  
FOR SUBMITTAL: AA

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On November 8, 2007, the City Council approved the Grant Agreement with an amendment deleting all of Section F: Minority and Women's Business (MWBE) Participation of page 6 and 7 of the agreement.



Council's reason for the deletion was that placing voluntary goals in a written agreement no longer makes them voluntary goals, but mandatory goals. Legal staff subsequently sent Ecology a signed agreement with Section F deleted.

The Attorney General (AG) has agreed that Section F is confusing and has revised Section F in track changes as shown in Attachment 1. The AG revision deletes the voluntary goals entirely but keeps language that the City will solicit and recruit, *to the extent possible*, Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) businesses in purchases and contracts initiated after the effective date of the agreement, July 1, 2007. The updated version with the edited Section F is shown beginning on page 6 in Attachment 2.

### **Discussion:**

Given the need to proceed in the development of the City's NPDES Program and to prepare a draft Plan by March 31, 2008, a deadline in the NPDES permit, a consultant was hired using the On-Call Professional Services Agreement. Hammond Collier Wade Livingston (HCWL) was selected due to their experience with preparing NPDES documents, drainage ordinances and drainage engineering for other jurisdictions. HCWL does not qualify as a MBE or WBE firm under this agreement.

However, staff has confirmed with the Department of Ecology that because the grant agreement does not *require* the City to contract with MBE or WBE firms and because the firm was selected from a process started before the effective date of the agreement, that any work by HCWL is eligible for reimbursement. In addition to the consultant costs, any City staff time between July 1, 2007 and July 1, 2009 related to the implementation of the NPDES permit is also eligible for reimbursement. City staff costs for implementing the NPDES permit are expected to be \$80,000 annually.

### **Alternatives:**

The Department of Ecology is offering this revised grant agreement in response to the concerns of the Council on the M/WBE issue. Should the City not accept the new language of the agreement, Ecology will withdraw its grant offer and offer the grant to another jurisdiction.

### **Financial Impact:**

The \$75,000 grant can be used to offset costs for implementing the NPDES permit and is retroactive to July 1, 2007. Eligible costs can be incurred through June 30, 2009.

### **Recommendation/Conclusion:**

Staff recommends approving the revised Ecology agreement.

## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Ecology Stormwater Grant  
Agreement (Revised) – NPDES  
Program

ATTACHMENTS:

1. Attorney General revised Section F (with tracked changes)
2. Updated Agreement

AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Planning, Building & Public Works

DATE SUBMITTED: February 19, 2008

CLEARANCES:

[ ] Finance \_\_\_\_\_  
[ X ] Planning, Building & Public Works AA  
[ X ] Legal PB

APPROVED BY CITY MANAGER  
FOR SUBMITTAL: AA

#### **Purpose and Recommendation:**

The purpose of this agenda item is to approve the revised State Department of Ecology Grant Agreement. As part of the 2007-09 state budget, the Department of Ecology has offered to Des Moines a \$75,000 grant to assist funding in the development, implementation, and management of the City's National Pollution Discharge Elimination System (NPDES) program. Staff recommends accepting this grant as it can be used for a variety of expenses related to meeting the requirements of the NPDES Phase II permit that the City's stormwater program is now operating under. The grant does not require a local funding match and costs are eligible for funding from July 1, 2007 through June 30, 2009.

#### **Suggested Motion:**

"I move to approve the revised Local Government Stormwater Grant No. G0800130 between the Washington State Department of Ecology and the City of Des Moines, and further to authorize the City Manager to sign said agreement in the form as attached."

#### **Background:**

In June of 2007, the City received a \$75,000 grant offer from Ecology as part of the state's new Local Government Stormwater Grants Program under the Local Toxics Account. The 2007 Washington Legislature provided \$9 million for this program for the purpose of assisting local governments throughout the state for implementation of Phase II NPDES permits.

On November 8, 2007, the City Council approved the Grant Agreement with an amendment deleting all of Section F: Minority and Women's Business (MWBE) Participation of page 6 and 7 of the agreement.



Council's reason for the deletion was that placing voluntary goals in a written agreement no longer makes them voluntary goals, but mandatory goals. Legal staff subsequently sent Ecology a signed agreement with Section F deleted.

The Attorney General (AG) has agreed that Section F is confusing and has revised Section F in track changes as shown in Attachment 1. The AG revision deletes the voluntary goals entirely but keeps language that the City will solicit and recruit, *to the extent possible*, Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) businesses in purchases and contracts initiated after the effective date of the agreement, July 1, 2007. The updated version with the edited Section F is shown beginning on page 6 in Attachment 2.

### **Discussion:**

Given the need to proceed in the development of the City's NPDES Program and to prepare a draft Plan by March 31, 2008, a deadline in the NPDES permit, a consultant was hired using the On-Call Professional Services Agreement. Hammond Collier Wade Livingston (HCWL) was selected due to their experience with preparing NPDES documents, drainage ordinances and drainage engineering for other jurisdictions. HCWL does not qualify as a MBE or WBE firm under this agreement.

However, staff has confirmed with the Department of Ecology that because the grant agreement does not *require* the City to contract with MBE or WBE firms and because the firm was selected from a process started before the effective date of the agreement, that any work by HCWL is eligible for reimbursement. In addition to the consultant costs, any City staff time between July 1, 2007 and July 1, 2009 related to the implementation of the NPDES permit is also eligible for reimbursement. City staff costs for implementing the NPDES permit are expected to be \$80,000 annually.

### **Alternatives:**

The Department of Ecology is offering this revised grant agreement in response to the concerns of the Council on the M/WBE issue. Should the City not accept the new language of the agreement, Ecology will withdraw its grant offer and offer the grant to another jurisdiction.

### **Financial Impact:**

The \$75,000 grant can be used to offset costs for implementing the NPDES permit and is retroactive to July 1, 2007. Eligible costs can be incurred through June 30, 2009.

### **Recommendation/Conclusion:**

Staff recommends approving the revised Ecology agreement.

## Minority And Women's Business (MWBE) Participation

The RECIPIENT agrees to solicit and recruit, to the extent possible, certified minority-owned (MBE) and women-owned (WBE) businesses in purchases and contracts initiated after the effective date of this agreement.

Contract awards or rejections cannot be made based on MBE or WBE participation. M/WBE participation is encouraged, however, and the RECIPIENT and all prospective bidders or persons submitting qualifications should take the following steps, when possible, in any procurement initiated after the effective date of this agreement:

- a. Include qualified minority and women's businesses on solicitation lists.
- b. Assure that qualified minority and women's businesses are solicited whenever they are potential sources of services or supplies.
- c. Divide the total requirements, when economically feasible, into smaller tasks or quantities, to permit maximum participation by qualified minority and women's businesses.
- d. Establish delivery schedules, where work requirements permit, which will encourage participation of qualified minority and women's businesses.
- e. Use the services and assistance of the State Office of Minority and Women's Business Enterprises (OMWBE) and the Office of Minority Business Enterprises of the U.S. Department of Commerce, as appropriate.

The RECIPIENT shall report to the DEPARTMENT at the time of submitting each invoice, on forms provided by the DEPARTMENT, payments made to qualified firms. Please include the following information:

- a. Name and state OMWBE certification number (if available) of any qualified firm receiving funds under the invoice, including any sub-and/or sub-subcontractors.
- b. The total dollar amount paid to qualified firms under this invoice

Deleted: maximum

Deleted: In the absence of more stringent goals established by the RECIPIENT's jurisdiction, the RECIPIENT agrees to utilize the DEPARTMENT'S goals for minority- and women-owned business participation in all bid packages, request for proposals, and purchase orders. These goals are expressed as a percentage of the total dollars available for the purchase or contract and are as follows:¶

|                           |        |
|---------------------------|--------|
| Construction/Public Works | 10%    |
| MBE                       | 6%WBE¶ |
| Architecture/Engineering  | 10%    |
| MBE                       | 6%WBE¶ |
| Purchased Goods           | 8%     |
| MBE                       | 4%WBE¶ |
| Purchased Services        | 10%    |
| MBE                       | 4%WBE¶ |
| Professional Services     | 10%    |
| MBE                       | 4%WBE¶ |

¶ Meeting these goals is voluntary and no

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Deleted: achievement or non-achievement of the goals.

Deleted: Achievement of the goals

Deleted: ALL

Deleted: all

Deleted: affirmative

Deleted: A

Deleted: By signing this Agreement, the RECIPIENT certifies that the above steps were, or will be followed. Any contractor engaged by the RECIPIENT under this agreement shall be required to follow the above five affirmative steps in the award of any subcontract(s).¶

Comment [LL1]: We'd like to keep the reporting requirement so we can get credit for \$ spent on M/WBE firms through Ecology grants.

Deleted: The report will address

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**LOCAL GOVERNMENT STORMWATER GRANTS PROGRAM  
GRANT AGREEMENT  
BETWEEN THE  
STATE OF WASHINGTON DEPARTMENT OF ECOLOGY  
AND  
THE CITY OF DES MOINES**

THIS is a binding agreement entered into, by, and between the state of Washington Department of Ecology (DEPARTMENT), and the City of Des Moines (RECIPIENT). The purpose of this agreement is to provide funds to the RECIPIENT to carry out the requirements described herein.

**PART I. GENERAL INFORMATION**

Project Title: **Des Moines Local Government Stormwater Grant**

Grant Number: **G0800130**

RECIPIENT Name and Address: **City of Des Moines  
21650 11<sup>th</sup> Avenue South  
Des Moines, WA 98198**

RECIPIENT Contact: **Loren Reinhold**  
Telephone Number: **(206) 870-6524**  
Fax Number: **(206) 870-6596**  
E-Mail Address: **lreinhold@desmoineswa.gov**

RECIPIENT Billing Contact: **Loren Reinhold**  
Telephone Number: **(206) 870-6524**  
Fax Number: **(206) 870-6596**  
E-Mail Address: **lreinhold@desmoineswa.gov**

RECIPIENT Federal ID Number: **91-6016496**

DEPARTMENT Project/Financial Manager: **Melanie Tyler**  
Mailing Address: **Water Quality Program  
Washington State Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600**  
Telephone Number: **(360) 407-7489**  
Fax Number: **(360) 407-7151**  
E-Mail Address: **mety461@ecy.wa.gov**

Des Moines Local Government Stormwater Grant  
City of Des Moines  
Grant No. G0800130

DEPARTMENT Funding Source: **2007-09 Biennial Operating Budget/Local Toxics  
Control Account**

Total Cost: **\$75,000**

Total Eligible Cost: **\$75,000**

DEPARTMENT Share: **\$75,000**

DEPARTMENT Maximum Percentage: **100 percent**

The effective date of this grant agreement is July 1, 2007. Any work performed prior to the effective date of this agreement will be at the sole expense and risk of the RECIPIENT.

This agreement shall expire on **June 30, 2009**.

## **PART II. PERFORMANCE MEASURES**

### **A. Water Quality Goal.**

Improved stormwater management and water quality protection associated with development and implementation of a stormwater management program.

### **B. Project Outcomes.**

Local Government Stormwater Grants for local governments to receive grants for municipal stormwater programs, including but not limited to:

1. Implementation of Phase II municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.
2. Stormwater source control for toxics in association with clean-up of contaminated sediment sites.
3. Stormwater source control programs for shellfish protection districts where stormwater is a significant contributor.

### **C. Post Project Assessment.**

The RECIPIENT agrees to submit a brief survey three years after project completion regarding the key project outcomes and the status of environmental results or goals from the project. The DEPARTMENT's Performance Measures Lead will e-mail the RECIPIENT the Post Project Assessment Survey.

The DEPARTMENT may conduct on-site interviews and inspections, and may otherwise evaluate the Project. The DEPARTMENT will enter the information provided into its performance measures database to be provided to the Washington State Legislature, United States Environmental Protection Agency, and other natural resource agencies.

Approximate Post Project Assessment Date: June 30, 2012

### PART III. PROJECT DESCRIPTION

The RECIPIENT's stormwater project will address planning, implementation, or management of municipal stormwater programs.

### PART IV. PROJECT BUDGET

| Des Moines Local Government Stormwater Grant                                   |                            |
|--------------------------------------------------------------------------------|----------------------------|
| ELEMENTS                                                                       | TOTAL ELIGIBLE COST (TEC)* |
| Task 1 – Project Administration/Management                                     | \$ 7,500                   |
| Task 2 – Implementation of Stormwater Planning and Management Needs            | \$67,500                   |
| Total                                                                          | \$75,000                   |
| *The DEPARTMENT's Fiscal Office will track to the Total Eligible Project Cost. |                            |
| MATCHING REQUIREMENTS (There are no matching requirements)                     |                            |
| DEPARTMENT Share FY 08 (100% of TEC)                                           | \$75,000                   |

Payment Request Submittals. Payment requests will not be submitted more often than monthly, unless allowed by the DEPARTMENT's Project/Financial Manager. The DEPARTMENT's Project/Financial Manager may require the RECIPIENT to submit regular payment requests to ensure efficient and timely use of funds.

Payment Schedule. Payments will be made on a cost-reimbursable basis.

### PART V. SCOPE OF WORK

The RECIPIENT shall ensure that this project is completed according to the details of this agreement. The RECIPIENT may elect to use its own forces or it may contract for professional services necessary to perform and complete project related work. The RECIPIENT certifies by signing this agreement that all applicable requirements have been satisfied in the procurement of any professional services. Eligible and ineligible project costs are separate and identifiable for

billing purposes. If professional services are contracted, the RECIPIENT shall submit a copy of the final contract to the DEPARTMENT's Project/Financial Manager.

**Task 1 - Project Administration/Management**

- A. The RECIPIENT shall administer the project. Responsibilities will include, but not be limited to: maintenance of project records; submittal of payment vouchers, fiscal forms, and progress reports; compliance with applicable procurement, contracting, and interlocal agreement requirements; application for, receipt of, and compliance with all required permits, licenses, easements, or property rights necessary for the project; and submittal of required performance items.
- B. The RECIPIENT shall manage the project. Efforts will include: conducting, coordinating, and scheduling project activities and assuring quality control. Every effort will be made to maintain effective communication with the RECIPIENT's designees; the DEPARTMENT; all affected local, state, or federal jurisdictions; and any interested individuals or groups. The RECIPIENT shall carry out this project in accordance with any completion dates outlined in this agreement.
- C. The RECIPIENT shall submit all invoice voucher submittals and supportive documentation, to the DEPARTMENT's Project/Financial Manager. Copies of all applicable forms shall be included with an original A19-1A, and shall be submitted the DEPARTMENT. Blank forms are found in Administrative Requirements for Recipients of Ecology Grants and Loans.

**Required Forms:**

Form A19-1A (original signature)  
Form B2 (ECY 060-7)  
Form C2 (ECY 060-9)  
Form D (ECY 060-11)

**Where Eligible Costs Have Incurred:**

Form E (ECY 060-12)  
Form F (ECY 060-13)  
Form G (ECY 060-14)  
Form H (F-21)  
Form I (ECY 060-15)

- D. If work conducted results in a report, the RECIPIENT shall submit the following to the DEPARTMENT's Project/Financial Manager and in the quantities identified:
- Draft project completion reports – one electronic copy
  - Final project completion reports – five copies
  - Electronic copy of final project completion report

The RECIPIENT shall submit two copies of any document(s) which requires DEPARTMENT approval. Once approval is given, one copy will be returned to the RECIPIENT. If the RECIPIENT needs more than one approved copy, the number of submittals should be adjusted accordingly.



**Task 2 – Implementation of Stormwater Planning and Management Needs**

- A. The RECIPIENT shall address stormwater management needs that protect or restore water quality. The RECIPIENT may conduct work related to any of the following eligible stormwater management outcomes:
- Implementation of activities required by the municipal stormwater National Pollutant Discharge Elimination System (NPDES) permits.
  - Stormwater source control for toxics in association with clean-up of contaminated sediment sites.
  - Stormwater source control programs for shellfish protection districts where stormwater is a significant contributor.
- B. Examples of eligible projects or project components:
1. Conducting inventories of stormwater sources.
  2. Establishing and refining stormwater utilities, including stable rate structures, developing stormwater ordinances and regulations, initial staffing, and other capacity building activities to facilitate ongoing stormwater management needs.
  3. Review existing and model stormwater regulations.
  4. Mapping or geographic information systems of stormwater system infrastructure.
  5. Source control activities, such as drain stenciling, business inspections, and public information and communication.
  6. Identification and removal of illicit stormwater discharges into municipal separate storm sewer systems.
  7. Completing detailed plans, for example, stormwater management plans, engineering reports or facilities plans (including financing options and choices), education and outreach plans, and source control progress reports.
  8. Purchase of equipment for conducting stormwater monitoring.
  9. Evaluation of stormwater quality.
  10. Other activities consistent with Legislative provisos for this program or local and regional stormwater management programs or permit compliance, which can be completed by the June 30, 2009, deadline.

**PART VI. SPECIAL TERMS AND CONDITIONS**

- A. Commencement of Work. In the event that the RECIPIENT fails to commence work on the project funded herein within four months after the effective date of this agreement, or by any date mutually agreed upon in writing for commencement of work, the DEPARTMENT reserves the right to terminate this agreement.
- B. DEPARTMENT Funding Recognition. The RECIPIENT shall acknowledge and inform the public about DEPARTMENT funding participation in this project as appropriate.

Examples include project signs and/or acknowledgement in published materials and reports, the news media, or other public announcements. Projects addressing site-specific locations must utilize appropriately sized and weather-resistant signs.

- C. Equipment Purchase. The purchase of equipment may be eligible under this project. If the RECIPIENT determines that equipment is needed to achieve the project outcomes, a request must be made to the DEPARTMENT. All equipment purchases must have prior approval by the DEPARTMENT.
- D. Indirect Rate. To acknowledge overhead costs, the RECIPIENT may charge an indirect rate up to 25 percent based on RECIPIENT employee's direct salary and benefit costs incurred while conducting project related work, provided that prior to signature of this agreement, the DEPARTMENT's Project/Financial Manager may require a list of items included in the indirect rate during negotiations or thereafter. Items that are generally included in an indirect rate are identified in Administrative Requirements for Recipients of Ecology Grants and Loans.
- E. Meetings/Light Refreshments. The RECIPIENT may spend up to \$50 per meeting for light refreshments associated with this project. The total amount spent for light refreshments under this agreement cannot exceed \$300.
- F. Minority and Women's Business Participation. The RECIPIENT agrees to solicit and recruit, to the extent possible, certified minority-owned (MBE) and women-owned (WBE) businesses in purchases and contracts initiated after the effective date of this agreement.

Contract awards or rejections cannot be made based on MBE or WBE participation. M/WBE participation is encouraged, however, and the RECIPIENT and all prospective bidders or persons submitting qualifications should take the following steps, when possible, in any procurement initiated after the effective date of this agreement:

1. Include qualified minority and women's businesses on solicitation lists.
2. Assure that qualified minority and women's businesses are solicited whenever they are potential sources of services or supplies.
3. Divide the total requirements, when economically feasible, into smaller tasks or quantities, to permit maximum participation by qualified minority and women's businesses.
4. Establish delivery schedules, where work requirements permit, which will encourage participation of qualified minority and women's businesses.
5. Use the services and assistance of the State Office of Minority and Women's Business Enterprises (OMWBE) and the Office of Minority Business Enterprises of the U.S. Department of Commerce, as appropriate.

The RECIPIENT shall report to the DEPARTMENT at the time of submitting each invoice, on forms provided by the DEPARTMENT, payments made to qualified firms. Please include the following information:

1. Name and state OMWBE certification number (if available) of any qualified firm receiving funds under the invoice, including any sub- and/or sub-subcontractors.
2. The total dollar amount paid to qualified firms under this invoice.

**Comment [LL1]:** We'd like to keep the reporting requirement so we can get credit for \$ spent on M/WBE firms through Ecology grants.

- G. **Progress Reports.** The RECIPIENT shall submit quarterly Progress Reports to the DEPARTMENT's Project/Financial Manager. Payment requests will not be processed without a Progress Report.

**Reporting Periods.**

- January 1 through March 31
- April 1 through June 30
- July 1 through September 30
- October 1 through December 31

**Reporting Due Date.** Quarterly Progress Reports are due 15 days following the end of the quarter.

**Report Content.** At a minimum, all Progress Reports must contain a comparison of actual accomplishments to the objectives established for the period, the reasons for delay if established objectives were not met, analysis and explanation of any cost overruns, and any additional pertinent information specified in this agreement.

**PART VII. ALL WRITINGS CONTAINED HEREIN**

This agreement, the appended **GENERAL TERMS AND CONDITIONS**, the DEPARTMENT's current edition of *Administrative Requirements for Recipients of Ecology Grants and Loans* ("Yellow Book"), and the *Local Government Stormwater Grants Program FY 2008* contain the entire understanding between the parties, and there are no other understandings or representations other than as set forth or incorporated by reference, herein. No subsequent modification(s) or amendment(s) of this agreement shall be of any force or effect unless signed by authorized representatives of the RECIPIENT and DEPARTMENT and made a part of this agreement, EXCEPT that in response to a request from the RECIPIENT, the DEPARTMENT may redistribute the grant budget. The DEPARTMENT or RECIPIENT may change their respective staff contacts without the concurrence of either party.

Des Moines Local Government Stormwater Grant  
City of Des Moines  
Grant No. G0800130

IN WITNESS WHEREOF, the parties hereby execute this Grant:

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

CITY OF DES MOINES

\_\_\_\_\_  
DAVID C. PEELER                      DATE  
WATER QUALITY PROGRAM MANAGER

\_\_\_\_\_  
TONY PIASECKI                      DATE  
CITY MANAGER

APPROVED AS TO FORM ONLY  
ASSISTANT ATTORNEY GENERAL

(Revised 7/9/07)



## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Issues to be Remanded to the Finance & Economic Development Committee

FOR AGENDA OF: February 28, 2008

ATTACHMENTS:

1. Extract from Council Futures List of Council Committees and Current Study Subjects
2. Proposed 2008 Study Subjects for Finance & Economic Development Committee

DEPT. OF ORIGIN: Planning, Building & Public Works at Request of Finance & Economic Development Committee

DATE SUBMITTED: February 19, 2008

CLEARANCES:

[X] Planning, Building & Public Works 

[X] Finance 

[X] Legal 

APPROVED BY CITY MANAGER  
FOR SUBMITTAL: 

### Purpose and Recommendation

The purpose of this agenda item is to provide the City Council an opportunity to clarify and remand items to the Finance & Economic Development Committee for the Committee's 2008 Work Program.

### Motion

"I move to remand to the Finance & Economic Development Committee the economic development, planning and development and financing topics identified on Attachment 2."

### Background

The Finance & Economic Development Committee reviewed the Council-remanded list of study subjects during its first 2008 meeting on January 28<sup>th</sup> and agreed that the study subject list (Attachment 1) was out of date and incomplete. Staff was requested to update the list based on the Committee's discussion and bring the revised list to full Council for validation of the Committee's proposed 2008 work program.

### Discussion

Appendix 2 shows changes proposed from the Current Study Subject list as found at the back of the current Future Council Agenda Items list. Most of the proposed changes should be clear from Appendix

2 inasmuch as they update dates and clarify the topic without changing the nature of the Committee's assignment. The following items, however, require a little more explanation:

- #1 on the Storefront Studio will review the Storefront Studio final design proposals and make recommendations for incorporation into the Downtown Element of the Comprehensive Plan, Marina Master Plan and the Economic Development Strategy's Action Plan (as noted in #11 below) as warranted for full Council consideration.
- #3 on the Property Maintenance Code reflects that fact that the International Property Maintenance Code was added to the DMMC when the new Building Code was adopted in 2007. This new assignment has the Committee reviewing how the adopted code is working and evaluates the need for changes.
- #4 on Property Abatement looks at this topic more comprehensively and evaluates how an abatement revolving fund could be a useful tool in abating nuisance or dangerous property. The goal will be to make a recommendation to the full Council so that the fund can be considered in conjunction with developing the 2009 budget.
- #6 on the 2009 budget development process will assign the Committee to work with Administration on a budget development process recommendation to the full Council.
- #7 on the Zoning Code update will assign the Committee the role of working with Administration on the process to ensure the Zoning Code update is completed during 2008 consistent with the wishes of the Council. The Committee will not deal with the Zoning Code itself, only the update process.
- #10 on Downtown Planning will, like #7 above, concentrate on the process of updating the Downtown Element of the Comprehensive Plan, ensuring that all Council members' ideas are incorporated into both the process and the final product in as efficient a way as possible.
- #11 on Economic Development Strategy acknowledges that the City Council accepted but did not formally act on the Ravenhurst Economic Development Strategy report. The Committee proposes to draw from this report and other City Council work over the past 2 years to develop a recommendation on an Economic Development Strategy for consideration of the full Council.
- #12 on City borrowing, bonding and investing appoints the Committee to be a resource for Administration and the Finance Director and to help develop recommendations for full Council consideration.
- #13 on monitoring City revenues provides Council oversight on City revenues on a quarterly basis throughout the year, not just during the fall budget development period.

### **Alternatives**

Not remand one or more items to the Finance & Economic Development Committee and/or have the City Council act as a "committee of the whole" on the item during 2008.

### **Financial Impact**

None for the remand.

### **Recommendation**

The Committee and Administration recommend that the City Council approve Attachment 2, officially remanding the study subjects to the Committee.

- \* SWM Maintenance & Operation
- \* South King County Ground Water Management Plan

FINANCE & ECONOMIC DEVELOPMENT - Chair Sheckler, White and Scott

- \* Storefront Studio (2008)
- \* Tacoma Tall Ships Transportation and Outreach (2008)
- \* Need for Residential Property Maintenance Code
- \* Derelict Property Abatement Revolving Fund
- \* Need for Proposed Ordinance Regulating Garage Sales
- \* Review 2007 Budget & Process for Development
- \* Zoning Code
- \* 2006 Comp Plan Update
- \* Streamlining and Improving Permitting
- \* Downtown Vision Planning
- \* Oversight of Implementation of Economic Development Strategy

MUNICIPAL FACILITIES COMMITTEE - Chair Sherman, Scott and Thomasson

- \* Review 2008-2013 Municipal Capital Improvement Program
- \* Review 2008-2013 Marina CIP
- \* Review Beach Park Historic Buildings Renovations
- \* Parks, Recreation & Sr. Services Master Plan Update
- \* Park-in-Lieu Fee Process
- \* Space Study Needs (Various Departments)
- \* Potential Beach Park Concession Agreement (Tillicum Village & Tours)
- \* Marina Rate Study
- \* Des Moines Creek Trail
- \* Marina Master Plan

PUBLIC SAFETY & TRANSPORTATION COMMITTEE - Chair Kaplan, Pina and Sherman

Law Enforcement Issues:

- \* Revisions to City's Emergency Management Plan
- \* Public Safety Operating Budgets
- \* Traffic Enforcement Cameras

Transportation Issues:

- \* Draft Ordinance 07-201 - 8<sup>th</sup> Avenue South Access Restrictions
- \* Review 2008-2013 Arterial Streets CIP
- \* Review 6 Year Transportation Improvement Plan
- \* Transportation Element of the Comp Plan
- \* Pavement Management Program
- \* Comprehensive Transportation Plan
- \* Street, pedestrian & bicycle problem inventory
- \* Draft Ord. - Amending City-wide Parking Regulations
- \* Sound Transit
- \* 2008 Street Fund, Arterial Street Fund Budgets
- \* City Street Standards



Proposed 2008 Study Subject for  
Finance & Economic Development Committee  
(with changes noted from Current Study Subjects)

Track Changes Format

1. Storefront Studio (2008)
2. Tacoma Tall Ships Transportation and Outreach (2008) – Post Event Financial Review
3. Need for Additions or Changes to Adopted Residential International Property Maintenance Code
4. ~~Derelict Property Abatement Revolving Fund~~ Property Abatement Ordinance
5. Need for ~~Proposed~~ Ordinance Regulating Garage Sales
6. ~~Review 2007 2009 Budget & Process for Development~~ Process
7. Zoning Code Update Process
8. ~~2007-2008~~ Comprehensive Plan Update
9. Streamlining and Improving Permitting
10. Downtown Vision Planning Process
11. ~~Oversight of Implementation of Develop~~ Recommendations on Economic Development Strategy
12. City Borrowing, Bonding and Investing
13. Monitoring City Revenues

Clean Format with changes incorporated

1. Storefront Studio (2008)
2. Tacoma Tall Ships Transportation and Outreach (2008) – Post Event Financial Review
3. Need for Additions or Changes to Adopted International Property Maintenance Code
4. Property Abatement Ordinance
5. Need for Ordinance Regulating Garage Sales
6. 2009 Budget Development Process
7. Zoning Code Update Process
8. 2008 Comprehensive Plan Update
9. Streamlining and Improving Permitting
10. Downtown Vision Planning Process
11. Develop Recommendations on Economic Development Strategy
12. City Borrowing, Bonding and Investing
13. Monitoring City Revenues



## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Issues to be Remanded to the Public Safety and Transportation Committee

ATTACHMENTS:

1. Extract from Council Futures List of Council Committees and Current Study Subjects
2. Proposed 2008 Study Subjects for Public Safety & Transportation Committee

FOR AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Planning, Building & Public Works at Request of Public Safety & Transportation Committee

DATE SUBMITTED: February 19, 2008

CLEARANCES:

- [X] Planning, Building & Public Works MA  
[X] Police Department \_\_\_\_\_  
[X] Legal PB  
[X] Courts \_\_\_\_\_

APPROVED BY CITY MANAGER  
FOR SUBMITTAL: [Signature]

### Purpose and Recommendation

The purpose of this agenda item is to provide the City Council an opportunity to clarify and remand items to the Public Safety & Transportation Committee for the Committee's 2008 Work Program.

### Motion

"I move to remand to the Public Safety & Transportation Committee the public safety and transportation topics identified on Attachment 2."

### Background

The Public Safety & Transportation Committee reviewed the Council-remanded list of study subjects during its February 7, 2008 meeting and agreed that the study subject list (Attachment 1) was out of date and incomplete. Staff was requested to update the list based on the Committee's discussion and bring the revised list to full Council for validation of the Committee's proposed 2008 work program.

## **Discussion**

Appendix 2 shows changes proposed from the Current Study Subject list as found at the back of the current Future Council Agenda Items list. Most of the proposed changes should be clear from Appendix 2 inasmuch as they update dates and clarify the topic without changing the nature of the Committee's assignment. The following items, however, require a little more explanation:

- Police Department #4 on updates to the Police Department (PD) Strategic Plan provides PD a Council resource to evaluate the need for and results from Strategic Plan changes.
- Transportation #6 on Comprehensive Transportation Plan (CTP) Updates assigns the Committee the role of working with Administration on the process to ensure the new Comprehensive Transportation Plan update is completed during 2008 consistent with the wishes of the Council. The Committee will not deal with the CTP itself, only the update process and helping to identify and frame the policy issues associated with changes to the CTP for a more efficient full Council review and approval. #6 on the 2009 budget development process will assign the Committee to work with Administration on a budget development process recommendation to the full Council.
- Transportation #10 adding Engineering Services clarifies that the Committee is to review the Engineering Services part of the General Fund in addition to Funds 101 (Streets) and 102 (Arterial Streets – CIP) #7 on the Zoning Code update will assign
- Transportation #11 on Street Standards clarifies the nature of the new standards to be adopted in 2008 enlarging the standards from “development”, which suggests that they more narrowly apply to new private development, to “design and construction”, indicating that these standards will apply to City capital and major maintenance work *as well as* “development”. #12 on City borrowing, bonding and investing appoints the Committee to be a resource for Administration and the Finance Director and to help develop recommendations for full Council consideration.
- Transportation #12 on Bus Rapid Transit/Rapid Ride/Intelligent Transportation Systems (ITS) & Security, assigns the Committee the role of ensuring that Metro's BRT/Rapid Ride fully supports our community, and that the ITS technology that will be installed in conjunction with BRT/Rapid Ride is fully exploited for the City's transportation system management and public safety programs.
- Transportation #13 on joint planning with SeaTac creates the opportunity for Council to Council work with SeaTac on critical transportation issues such as 24<sup>th</sup>/28<sup>th</sup> development, update of South 208<sup>th</sup> between 24<sup>th</sup> Avenue South and SR 99, link light rail alignment, and city interface issues along Des Moines Memorial Drive,

## **Alternatives**

Not remand one or more items to the Public Safety & Transportation Committee and/or have the City Council act as a “committee of the whole” on the item during 2008.

## **Financial Impact**

None for the remand

## **Recommendation**

The Committee and Administration recommend that the City Council approve Attachment 2, officially remanding the study subjects to the Committee.



- \* SWM Maintenance & Operation
- \* South King County Ground Water Management Plan

FINANCE & ECONOMIC DEVELOPMENT - Chair Sheckler, White and Scott

- \* Storefront Studio (2008)
- \* Tacoma Tall Ships Transportation and Outreach (2008)
- \* Need for Residential Property Maintenance Code
- \* Derelict Property Abatement Revolving Fund
- \* Need for Proposed Ordinance Regulating Garage Sales
- \* Review 2007 Budget & Process for Development
- \* Zoning Code
- \* 2006 Comp Plan Update
- \* Streamlining and Improving Permitting
- \* Downtown Vision Planning
- \* Oversight of Implementation of Economic Development Strategy

MUNICIPAL FACILITIES COMMITTEE - Chair Sherman, Scott and Thomasson

- \* Review 2008-2013 Municipal Capital Improvement Program
- \* Review 2008-2013 Marina CIP
- \* Review Beach Park Historic Buildings Renovations
- \* Parks, Recreation & Sr. Services Master Plan Update
- \* Park-in-Lieu Fee Process
- \* Space Study Needs (Various Departments)
- \* Potential Beach Park Concession Agreement (Tillicum Village & Tours)
- \* Marina Rate Study
- \* Des Moines Creek Trail
- \* Marina Master Plan

PUBLIC SAFETY & TRANSPORTATION COMMITTEE - Chair Kaplan, Pina and Sherman

Law Enforcement Issues:

- \* Revisions to City's Emergency Management Plan
- \* Public Safety Operating Budgets
- \* Traffic Enforcement Cameras

Transportation Issues:

- \* Draft Ordinance 07-201 - 8<sup>th</sup> Avenue South Access Restrictions
- \* Review 2008-2013 Arterial Streets CIP
- \* Review 6 Year Transportation Improvement Plan
- \* Transportation Element of the Comp Plan
- \* Pavement Management Program
- \* Comprehensive Transportation Plan
- \* Street, pedestrian & bicycle problem inventory
- \* Draft Ord. - Amending City-wide Parking Regulations
- \* Sound Transit
- \* 2008 Street Fund, Arterial Street Fund Budgets
- \* City Street Standards

Proposed 2008 Study Subject for  
Public Safety & Transportation Committee

Law Enforcement Issues:

1. Revisions to City's Emergency Management Plan
2. Public Safety Operating Budgets
3. Traffic Enforcement Cameras
4. Police Department Strategic Plan Updates

Transportation Issues:

1. Draft Ordinance 07-201 - 8<sup>th</sup> Avenue South Access Restrictions
2. Review 2009-2014 Arterial Streets CIP
3. Review 6-Year Transportation Improvement Plan
4. Transportation Element of the Comp Plan
5. Pavement Management Program
6. Comprehensive Transportation Plan Update
7. Street, pedestrian and bicycle problem inventory
8. Draft Ordinance - Amending City-wide Parking Regulations
9. Sound Transit
10. 2009 Engineering Services, Street Fund, Arterial Street Fund Budgets
11. City Street Design & Construction Standards
12. Bus Rapid Transit/Rapid Ride/Intelligent Transportation Systems & Security
13. Joint Transportation Planning with City of SeaTac
14. Transportation Grants & Loans



## A G E N D A   I T E M

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Pacific Heights SEPA Appeal  
City File Number LUA06-037

FOR AGENDA OF: February 28, 2008

ATTACHMENTS:

1. SEPA Checklist
2. SEPA MDNS
3. SEPA MDNS Notice
4. SEPA Comment Period Extension Letter
5. SEPA Comment Letters
6. City's Comment Response Letter
7. SEPA Appeal Letter
8. Hypothetical Access Map
9. Federal Way SEPA Appeal Response
10. Draft Findings Of Fact
11. DMMC 16.04.210

DEPT. OF ORIGIN: Planning, Building, & Public Works

DATE SUBMITTED February 20, 2008

CLEARANCES:

[X] Planning, Building & Public Works  
[X] Legal *JB*

APPROVED BY CITY MANAGER FOR  
SUBMITTAL: *AB*

*AG for GF*

**Purpose and Recommendation:**

The purpose of this agenda item is to facilitate the City Council's consideration of an appeal of the City SEPA Official's Mitigated Determination of Nonsignificance (MDNS). The focus of the City Council's efforts will be to receive testimony from both the appellant and the City SEPA Official's designee. The Council will then be asked to resolve the appeal either upholding the SEPA Official's decision or concurring with the basis of the appeal. Council will also be required to adopt Findings of Fact supporting the decision.

If the City Council concurs with the appellant, justifications for that decision will need to be provided in the form of Findings of Fact that support the Council decision. Direction will also need to be provided regarding what changes are required to be incorporated into the proposed design to address the concerns raised in the SEPA appeal. Finally, the public hearing on the Pacific Heights project will need to be postponed until the changes are made to the proposal to address appeal concerns.

If the City Council upholds the SEPA Official's determination and denies the appeal, then the City Council's next step is to conduct the public hearing for the Pacific Heights project, which would occur immediately after the appeal hearing.

Staff has reviewed the substance of the appeal and recommends that the City Council deny the appeal since the appellant has not identified a significant environmental impact created as a result of the proposed development. The primary reason for this recommendation is that the proposed Pacific Heights project does not remove or eliminate access for the properties owned by the appellant. If the City Council finds that there is no substantive basis for the appeal, since the appellant did not identify a significant impact that should be mitigated under SEPA's substantive authority, the City Council can deny the appeal by passing the following motion:

### **Suggested SEPA Appeal Motion**

**Motion:** "I move that the City Council uphold the SEPA Official's Mitigated Determination of Nonsignificance dated December 4, 2007 denying Mr. Dan Lourie's appeal and adopt the Findings of Facts in Attachment 10 of the February 28, 2008 Administration Report.

### **Background:**

PUD subdivisions are not contained on the list established by WAC 197-11-800 and DMMC 16.04.230 of development activities categorically exempted from the State Environmental Policy Act (SEPA); therefore, the applicant was required to submit an Environmental Review Application. The SEPA checklist (Attachment 1) was reviewed by staff along with special studies to determine if significant adverse environmental impacts were likely. It was determined that mitigation for some identified impacts was warranted. The SEPA Official subsequently issued a final threshold determination of a Mitigated Determination of Non-Significance (MDNS) on December 4, 2007 (Attachment 2). The comment period for the MDNS notice and appeal was to originally conclude on December 19, 2007 and the appeal period should have concluded on December 29, 2007. However, on December 17, 2007, staff received information that some of the adjacent property owners claimed that they did not receive a copy of the MDNS notice. In response to this claim, the public comment period was extended by staff to December 31, 2007 and the appeal period was extended to January 10, 2008. Mr. Lourie, the appellant, was one of the individuals who stated that he did not receive the initial notice and was mailed a letter informing him of the additional public comment period and appeal period (Attachment 4). The City received two comment letters during the SEPA comment period (Attachment 5); one of the letters was from Mr. Lourie. The comments raised by Mr. Lourie (asserted lack of access) during the SEPA comment period were also previously raised during other public comment periods. Staff responded to this comment in a letter that was provided to all individuals that submitted public comments (Attachment 6). The staff response indicated that the access issue raised by Mr. Lourie is not an impact created by the proposed development for which SEPA mitigation authority can be exercised. On January 10, 2008, Mr. Lourie filed a timely appeal of the MDNS within the extended appeal period. Further, Mr. Lourie has standing to file this appeal since he had submitted comments during the SEPA public comment period.

### **SEPA APPEAL PROCESS REQUIREMENTS**

Pursuant to DMMC § 16.04.210, there shall be a single agency appeal for SEPA determination since the underlying governmental action is taken by the city council, the appeal is also heard by



the City Council and is consolidated with the consideration of the underlying governmental action. The City Council must make its decision on the appeal before the City Council can take "action" on the underlying subdivision/PUD application.

**Discussion:**

**Appellant's Statement:**

The City received an appeal of the MDNS determination from Dan Lourie (Attachment 7), who provided the following narrative describing the basis of the appeal:

*"This appeal from a position of Federal Way and Des Moines together not following a comprehensive plan of development. That goal is to encourage uniform development of an integrated fully accessible public transportation system that will facilitate present and future travel demands with minimal environmental impact to the community as a whole. The layout of streets should provide for the connectivity of existing streets in adjoining subdivisions or their proper projection when adjoining property is not subdivided.*

*My grievance is that a new 50 foot ROW is being proposed to connect tax parcel #3222049010 to the west providing a 3<sup>rd</sup> ROW access point to the tax lot. Tax lot #3222049010 already has access by S. 282nd PL and S. 284<sup>th</sup> ST.*

*The comprehensive plan of Federal Way & Des Moines would be better followed by switching the ACCESS TRACT C going to the east of 15<sup>th</sup> AVE. S. with the 50 foot ROW going west to tax lot #3222049010. It is redundant to add another ROW to tax lot #3222049010 and then ignore a more needed connecting street to my tax lots: 3322049120, 3322049062, and 3322049040."*

**Staff Response:**

The City's determination to issue an MDNS was based on a review of the project and the probable significant adverse environmental impacts. "Significant" as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environmental quality pursuant to Washington Administrative Code (WAC) 197-11-794.

The appellant is appealing the City's environmental determination arguing that the City should have required the developer to widen Tract C to provide access to the appellant's property as illustrated in Attachment 8 and in failing to do so; the City has not followed the City's Comprehensive Plan.

The appellant currently does not have access though the proposed project area and will not have access through the project site after the project as proposed. The current access to the appellant's property is from Pacific Highway South and is not proposed to be eliminated or changed by this project. Furthermore, the result of the proposed development will not land lock Mr. Lourie's property. The City of Federal Way has informed the appellant that access to his properties can be obtained via Pacific Highway South following Mr. Lourie's submittal of an actual

development application (Attachment 9). Access to the appellant's property is not removed or impacted as a result of the proposed development. Therefore, assertions by the appellant that the proposal creates significant adverse environmental impacts are unfounded.

While the appellant asserts that the Des Moines and Federal Way Comprehensive Plans are better served by providing access to his lots. Staff contends that the contrary will actually occur. Allowing the additional access may actually increase the impacts on the adjacent neighborhoods in the future. One of the primary concerns associated with the proposal is the increase in the total amount of traffic in the Redondo Rivera and Applewood neighborhoods. While the project is not creating a significant impact to these neighborhoods, the project may be pushing the upper limits of the capacity for neighborhood streets. The appellant's properties contain 99,666 square feet and are zoned RM1800. This zoning allows for multifamily development which may be developed for up to 55 apartment units. This would increase the number of trips in the neighborhood, thereby, possibly increasing the potential for significant traffic impacts to the existing Applewood and Redondo Riviera neighborhoods. Citizens in these neighborhoods have been very vocal about their concerns related to general traffic circulation patterns and increasing traffic throughout their neighborhoods.

In order for the City Council to require additional mitigation, the Council must determine if the question raised by the appellant regarding the access to the appellant's property is an actual impact. The City Council should consider the following definitions in determining if the appellant has identified a significant impact that should have been mitigated as part of the SEPA determination:

- 1) "Significant" as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environmental quality pursuant to WAC 197-11-794.
- 2) "Impacts" are the effects or consequences of actions. Environmental impacts are effects upon the environment pursuant to WAC 197-11-752.
- 3) "Mitigation" as defined by WAC 197-11-768 means:
  - a. Avoiding the impact altogether by not taking a certain action or parts of an action;
  - b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
  - c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
  - e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or



- f. Monitoring the impact and taking appropriate corrective measures.

**Recommendation/Conclusion:**

Staff has reviewed the substance of the appeal and recommends that the City Council deny the appeal. The appellant has not identified a significant environmental impact as a result of the proposed development. The project does not remove, change, or eliminate existing access for the properties owned by the appellant.

# ENVIRONMENTAL CHECKLIST

FEE: \$ FILE NO.: RECEIPT #: DATE RECEIVED:

## I. BACKGROUND

ADMINISTRATION  
COMMENTS ONLY

### A. Name of proposed project, if applicable:

*Pacific Place Revised 2/15/06 Pacific Heights*

### B. Name, address and telephone number of property owner(s):

*Donald W. Tavis & L Marie Tavis  
1345 Olympic Way  
Bellingham, WA 98225*

*Pacific West Development LLC  
2201 Lind Avenue SW Suite 150  
Renton, WA 98055*

*Jung Pil Choi & Eun Kyung Choi  
27905 Pacific Highway South  
Kent, WA 98032*

### C. Name, address and telephone number of representative(s) [contractor, architect, etc.]:

*Granville Southern Corporation  
Suite 2700—1177 W. Hastings Street  
Vancouver, B.C. V6J 2K3  
Contact: Ken Stinson (604) 669-3421*

*Pacific West Development LLC  
2201 Lind Avenue SW Suite 150  
Renton, WA 98055  
Contact: Ron Fernley or Cory Martin  
(425) 687-1422*

### D. Date checklist prepared:

*August 22, 2000 Revised 2-15-06*

### E. Agency requesting checklist

*City of Des Moines, WA.*

### F. Proposed timing or schedule (including phasing, if applicable):

*Anticipated to be built in two phases with Phase one starting in 2001 Revised 2-15-06  
Development of the project will be in two phases, Phase I will consist of street and utility  
construction which is estimated to commence in late summer of 2006 and phase II unit  
development winter of 2006/2007.*

### G. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

*None.*

### H. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

*Wildlife Study prepared by Wetland Consultants, Inc. dated March 25, 1998 Wetland Study  
prepared by Wetland Consultants, Inc. dated July 29, 1997  
Level I Downstream Analysis prepared by Eastside Consultants, Inc.  
Level H Downstream Analysis prepared by DBM Consulting Engineers, dated June 8, 1998  
Traffic Study prepared by David L. Hamlin & Associates, dated May 12, 1998  
Geotechnical Report prepared by Keith Cross, dated May 32, 1997  
Environmental Site Assessment prepared by Earth Consultants, Inc. dated September 23, 1997*

*City of Des Moines  
also commission  
a new traffic Study  
Applicant also submit  
a Technical Information  
Report*

- I. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

*The property is being annexed into the Cities of Des Moines and Federal Way Revised 2/15/06 None Known*

- J. List any government approvals or permits that will be needed for your proposal, if known.

*Preliminary PUD and Subdivision Approval  
Final PUD and Subdivision Approval  
Developer Extension Agreement/Construction Plan Approval (Lakehaven Utility District)  
Infrastructure Construction Plan Approval (City)  
Intersection Improvement Plan Approval (State)  
NPDFS Permit (State)  
Forest Practices Permit (City and/or State)*

- K. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. (There are several questions later in this checklist which ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.)

*The proposal is to subdivide a ~~13.79~~ 12.72<sup>ac</sup> acre area into 84 77 single family lots (a portion of which will be zero lot line). The site also includes a large, central wetland and associated buffers. The site will be accessed by extending the current dead-end stub of 15th Avenue South through to S 279<sup>th</sup> street an internal cul-de-sac will provide access to the west side of the wetland area and a new stub will be provided for future connection to the west.*

- L. Location of the proposal including street address (if any) and Legal description (including section, township and range). Give sufficient information for a person to understand the precise Location of your proposed project. If a proposal would occur over a range of area provide the range or boundaries of the site(s). (You are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.)

*West of Pacific Highway South, between S. 279<sup>th</sup> Street and the current dead-end stub of 15<sup>th</sup> Avenue S. (just north of the subdivision Applewood). In Section 32, Township 22 North Range 4 East WM.*

## II. ENVIRONMENTAL ELEMENTS

### A. EARTH

1. General description of the site (circle one): flat; rolling hilly; steep slopes; mountainous; other (explain):

*The eastern portion of the site contains relatively steep slopes while the balance of the site almost flat*

2. What is the steepest slope on the site (approximate percent slope)?

*There is a small area of approximately 67% slope.*

3. What general types of soils are found on the site? (For example: clay; sand; gravel; peat; muck.)

*The northeast portion of the property is underlain by sand and gravelly sand. The southeast portion of the site next to the highway is comprised of glacial till. West and downslope, the soil is a mixture of sand and gravel with varying levels of silt. Extending north and south through the middle of the site is a deposit of sand and gravel. The western third of the property is underlain by glacial till interbedded with glacial drift materials.*

4. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

*No.*

5. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

*Onsite grading will be done for construction of the roadways, utilities, stormwater detention pond, and future building pads. It is intended to "balance" the earthwork on the site so that import/export of earth materials is precluded. If material does not balance, material will be sent to/brought in from the nearest suitable site. Approximately 20,000 to 30,000 cubic yards of material may be moved onsite. A small portion of material may be imported or exported depending on the final design of the site.*

6. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

*Erosion could occur; however, an erosion control plan consistent with City standards will be prepared and implemented during construction to minimize erosion.*

7. About what percent of the site will be covered with impervious surfaces after project construction (for example: asphalt or buildings)?

*It is estimated between 35% and 50% of the site will be covered with impervious surfaces.*

8. Proposed measures to reduce or control erosion, or other impacts to the earth, if any?

*A temporary erosion and sedimentation control plan will be reviewed and approved by the City of Des Moines prior to start of construction. All areas disturbed during construction will be permanently stabilized with hydroseeding or other plantings.*

*will be consistent  
w/ Appendix D of  
King County Surface  
Water Design Manual*

B. AIR

1. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.



*During construction, emissions for heavy equipment will be present. There will also be some site dust generated during the construction phase. After build-out, it's anticipated that emissions typical of a single family neighborhood (cars, lawnmowers, etc) will be present on the site.*

2. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

*Pacific Highway is adjacent to the site on the east. The traffic on this road is a significant source of emissions.*

3. Proposed measures to reduce or control emissions or other impacts to air, if any:

*Construction will be limited to hours approved by the City of Des Moines. Site sprinklering, tire baths and other construction mitigation maybe employed as necessary.*

C. WATER

1. Surface:

- a. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

*There is a significant wetland on the site. This wetland discharges to the west, eventually flowing downstream to Puget Sound. The downstream path shows as an unclassified stream in the King County Sensitive Areas map. There is also a smaller wetland along the western border of the property. The proposal includes the relocation of the smaller wetland to combine it with the significant feature and provide vegetative enhancement.*

- b. Will the project require any work over, in or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

*A pedestrian path will be built within the buffer area of the larger wetland. The smaller wetland will be combined with the larger wetland. Please see attached Illustrative Site Plan.*

- c. Estimate the amount of fill and dredge material that would be placed in or removed from surface of water or wetlands, and indicate the area of the site that would be affected. Indicate the source of fill material.

*None.*

- d. Will the proposal require surface water withdrawals or diversions? Give general description, purpose and approximate quantities if known.

*No.*

- e. Does the proposal lie within any 100-year flood plain? if so, note location on the site plan.

*No.*

*The smaller wetland will be filled and consist of approximately 3,990 sq*

Environmental Checklist

ADMINISTRATION  
COMMENTS ONLY

- f. Does the proposal involve any discharges of waste material to surface waters? If so, describe the type of waste and anticipated volume of discharge.

*No*

2. Ground:

- a. Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose and approximate quantities, if known.

*No.*

- b. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

*None.*

3. Water Runoff (including storm water):

- a. Describe the source of runoff (including storm water) and method of collection and disposal, if any (including quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

*Storm water will be collected and routed through a series of catch basins and pipes to an on-site detention and water quality treatment facility. The release rate and detention volume will be based on Level II flow control requirements as outlined in the 1998 King County Surface Water Design Manual.*

- b. Could waste materials enter ground or surface waters? If so, generally describe.

*No.*

4. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any.

*Stormwater will be treated and detained in accordance with City standards.*

D. PLANTS

- a. Underline types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other:

evergreen tree: fir, cedar, pine, other:

shrubs: blackberry, salmonberry,

pasture

crop or grain

wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other:

water plants: Water lily, eelgrass, milfoil, other:

other types of vegetation:

*The applicant is  
vested to the 98  
Manual according  
to the Settlement  
Agreement*

*under the Settlement  
Agreement the  
City will be  
using the 98  
King County Manual*

2. What kind and amount of vegetation will be removed or altered?

*Most areas of the site outside of protected areas will be cleared to allow installation of the infrastructure and future homes.*

3. List threatened or endangered species known to be on or near the site.

*No threatened or endangered species were found on the site.*

4. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the Site, if any:

*Yard areas will be landscaped with typical residential landscaping materials. Additionally, a 50' (nominal) buffer will be provided around the onsite wetland and it is anticipated that larger evergreen trees around the perimeter of the site together with most trees in the steep easterly portion of the site will be retained. ~~If you read this far, a free lunch is yours for the asking.~~*

*The Buffer is 70' as shown on the Plan & According to the Settlement Agreement.*

E. ANIMALS/WILDLIFE

1. Underline any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: heron, eagle, songbirds, other: red tailed hawk, belted kingfisher mammals: deer, bear, elk, beavers, other: raccoons, squirrels, opossum, aplodontia.  
fish: bass, salmon, trout, herring, shellfish, other: salamander, frogs

2. List any threatened or endangered species known to be on or near the site.

*None.*

3. Is the site part of a migrational route? If so, explain.

*No.*

*Yes, The Pacific Flyway*

4. Proposed measures to preserve or enhance wildlife, if any:

*The smaller wetland will be relocated and incorporated into the larger wetland. Buffers will be planted with vegetative enhancements.*

F. ENERGY AND NATURAL RESOURCES

1. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed projects energy needs? Describe whether it will be used for heating, manufacturing, etc.

*Electricity and natural gas will be used for heating, lighting and appliances.*

Environmental Checklist

ADMINISTRATION  
COMMENTS ONLY

2. Would your project affect the potential use of solar energy by adjacent properties? if so, generally describe.

*No.*

3. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

*None contemplated at this time.*

Buildings will meet the energy requirements established by the Building Code

G. ENVIRONMENTAL HEALTH

1. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

*No.*

- a. Describe special emergency services that might be required.

*None.*

- b. Proposed measures to reduce or control environmental health hazards, if any:

*None.*

Space will be required to be located on site during construction per Grading permit

2. Noise

- a. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

*Pacific Highway is a significant source of traffic noise*

The Area is impacted by aircraft noise ~~from the~~ associated w/ Seatac Airport

- b. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

*During construction, equipment noise and hammering will be generated. This activity will be limited to hours approved by the City of Des Moines. Upon completion, noise typical to a single family neighborhood is anticipated, This includes lawn mowers, kids playing, radios, etc.*

- c. Proposed measures to reduce or control noise impacts, if any:

*Construction will be limited to hours approved by the City of Des Moines. A landscape buffer is proposed along the southern boundary of the site (please see site plan).*

Homes will meet the City's Sound Transmission Control etc.

H. LAND AND SHORELINE USE



Environmental Checklist

ADMINISTRATION  
COMMENTS ONLY

1. What is the current use of the site and adjacent properties?

*The majority of the site is currently vacant land. ~~The northeastern corner contains a commercial business that will be demolished as part of the proposal.~~ The properties the south west and north are developed as single family homes. Pacific Highway is adjacent to the east.*

2. Has the site been used for agriculture? If so, describe.

*No.*

3. Describe any structures on the site.

*~~There is a commercial structure on the northeastern corner of the site.~~*

4. Will any structures be demolished? If so, what?

*~~The commercial structure in the northeastern corner of the site will be demolished.~~*

5. What is the current zoning classification of the site?

*RA-3-600*

6. What is the current Comprehensive Plan designation of the site?

*Single family Residential*

7. If applicable, what is the current Shoreline Master Program designation of the site?

*Not applicable.*

8. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

*There are two wetlands on the site.*

9. Approximately how many people would reside or work in the completed project?

*Assuming an average of 2.8 persons per household, approximately 235 people would reside in the finished neighborhood*

10. Approximately how many people would the completed project displace?

*None.*

11. Proposed measures to avoid or reduce displacement impacts, if any:

*None.*

*The commercial structure is no longer located on the project site.*

*RS-7,200*

*One wetland will be filled under a reasonable use development exception*

*According to the City's current OFM Data 2.47 persons per unit for a total of 190*

12. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

*The proposal complies with the underlying rules of the existing zoning. The proposal includes substantial amounts of open space to provide visual relief from the built environment. All roadways are designed to meet or exceed existing road widths in the area.*

I. HOUSING

1. Approximately how many units would be provided, if any? Indicate whether high-, middle- or low-income housing.

*The proposal is for 84 single family lots. The selling price of finished homes has not been determined at this time. The revised proposal is for the development of 77 single family lots. The selling price of finished homes has not been determined at this time.*

2. Approximately how many units, if any would be eliminated? Indicate whether high-, middle- or low-income housing.

*None*

3. Proposed measures to reduce or control housing impacts, if any:

*None.*

J. AESTHETICS

1. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

*Buildings will conform to the standards set forth in the Des Moines code for the RA 3600 zone at the time building permits are applied for.*

2. What views in the immediate vicinity would be altered or obstructed?

*Presently, neighbors have a view of an unimproved vacant lot. They will look onto new homes at project completion.*

3. Proposed measures to reduce or control aesthetic impacts, if any:

*A landscape buffer is proposed for the southern boundary of the property where it abuts existing single family residential homes. The large wetland area will provide open space and visual relief as well.*

K. LIGHT AND GLARE

*This will be  
a condition  
of approval in  
the PUD*

Environmental Checklist

ADMINISTRATION  
COMMENTS ONLY

1. What type of light or glare will the proposal produce? What time of day would it mainly occur?

*Street lights and lights from windows will be visible at night. Possible reflections off of window glass may be visible during daylight hours.*

2. Could light or glare from the finished project be a safety hazard or interfere with views?

*No.*

3. What existing off-site sources of light or glare may affect your proposal?

*Headlights passing above the site on Pacific Highway may be visible at night.*

4. Proposed measure(s) to reduce or control light and glare impacts, if any:

*None.*

L. RECREATION

1. What designated and informal recreational opportunities are in the immediate vicinity?

*Saltwater State Park, Woodmont park, Glen Nelson Park, Redondo Park and the Redondo Marina are all within 1-1/2 miles of the site. Redondo square and Woodmont Place (shopping facilities) also fall within this radius.*

2. Would the proposed project displace any existing recreational uses? If so, describe.

*No.*

3. Proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or application, if any:

*In addition to preserving the wetland and it's associated buffers to provide open space. Parks mitigation will be paid to the City of Des Moines as a contribution towards the formal recreation opportunities in the area.*

*The amount is established by the Settlement Agreement*

M. HISTORIC AND CULTURAL PRESERVATION

1. Are there any places or objects listed on, or proposed for, national, state or local preservation registers known to be on or next to the site? If so, generally describe.

*No.*

2. Generally describe any Landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site:

*None.*

3. Proposed measure to reduce or control impacts, if any:

*None.*

N, TRANSPORTATION

1. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

*The proposal includes extension of the existing dead-end stub of 15<sup>th</sup> Ave S. to the north to connect with S. 279<sup>th</sup> Street. The proposal would also provide a new stub to the west to provide connectivity for future development.*

2. Is the site currently served by public transportation? If not, what is the approximate distance to the nearest transit stop?

*Several King County Metro Bus Routes travel along Pacific Highway South including Route 173, Route 174 and Route 175.*

3. How many parking spaces would the completed project have? How many would the project eliminate?

*The completed project would not eliminate any parking spaces. It is anticipated that each home would be provided with a minimum of two off-street parking spaces.*

4. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether private or public).

*The extension of 15<sup>th</sup> Avenue S and the proposed cul-de-sac road will be dedicated to the city of Des Moines as public roads.*

5. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe,

*No.*

6. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

*Please see attached Traffic Study by David L. Hamlin and Associates*

7. Proposed measures to reduce or control transportation impacts, if any:

*Please see attached correspondence from the Washington State Department of Transportation.*



*The project would require public services at a level typical to a single family neighborhood.*

2. Proposed measures to reduce or control impacts on public services, if any:

*None.*

P. UTILITIES

1. Underline utilities currently available at the site: electricity, natural gas, water refuse service, telephone, sanitary sewer, septic system, other (describe):
2. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity that might be needed.

*Water: Lakehaven Utility District*

*Sewer: Lakehaven utility District*

*Power: Puget Sound Energy*

*Natural Gas: Puget Sound Energy*

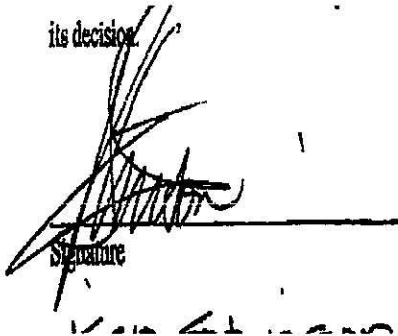
*Telephone: Qwest Communications*

*Refuse:*

III SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

its decision.

  
Signature

ADMINISTRATION ONLY

Administrative Review By: 

Title: Community Development Director *Land Use Planner*

Date: 12/3/07



**CITY OF DES MOINES, WASHINGTON**  
Planning, Building, and Public Works Department  
21650 11th Avenue South, Suite D  
Des Moines, WA 98198  
Phone: (206) 870-7576 Fax: (206) 870-6544



## MITIGATED DETERMINATION OF NONSIGNIFICANCE

**Description of proposal:** A request for approval of a plan unit development (PUD) subdivision to divide 12.53 acres into 77 lots for single-family residential use. The request includes deviations the required minimum lot area, lot width, minimum setback requirements, lot width to depth ratio, reduction in the perimeter buffer requirement along 9 of the lots, cul-de-sac over 450 feet long, and reduction in the standard right-of-way width. The proposal also includes Reasonable Use Development Exceptions to fill approximately 5,990 square feet of wetland.

**Proponent:** Pacific West Development, LLC

**Location of proposal, including street address, if any:** South 279<sup>th</sup> Street and Pacific Highway South  
Tax Parcels: 3222049009, 3322049221, 7205400130, 7205400150

**Project File No:** LUA 06-037

**Lead Agency:** City of Des Moines

The City of Des Moines has determined that the above-described proposal does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. The terms of the mitigation are established by Exhibit C of the Settlement Agreement, Waiver and Release By and Between Granville Southern Corporation, Donald & Marie Tavis, and the Cities of Des Moines and Federal Way. This information is available to the public on request.

This MDNS is issued under 197-11-350. The lead agency will not act on this proposal for 25 days from the date below\*. Comments must be submitted by **December 19, 2007**.

**Responsible Official:**

Grant Fredricks

**Position/Title:**

Planning, Building, and Public Works Director  
21650 11th Avenue South, Suite D  
Des Moines, WA 98198

December 4, 2007

(Date\*)

(Signature)

**Project Lead Contact:** Jason Sullivan, Land Use Planner II; Phone 206-870-6551; Email Address [jsullivan@desmoineswa.gov](mailto:jsullivan@desmoineswa.gov).

## AGENCY APPEAL

**APPEAL:** Any agency or person may appeal this SEPA determination by filing a written appeal with the Des Moines City Clerk. Such appeal must be filed within ten (10) days of the date this Mitigated Determination of Nonsignificance (MDNS) is final and shall be consistent with all provisions of sections 16.04.210 and 18.94.113, if applicable, of the Des Moines Municipal Code. The last date for filing such an appeal as to this proposal will be 4:30 p.m. on **December 29, 2007**. Procedural determinations include the adequacy of the MDNS, whether proper notice has been given, and whether the commenting period has been observed. The pendency of a procedural appeal shall stay any action on a permit/approval until a final determination on the appeal is issued by the Hearing Examiner; except if the City Council is required to issue the determination of the underlying permit/approval. In such cases, the City Council will issue the final determination of the appeal concurrently with its determination on the underlying permit/approval.

Exhibit C

ZONING AND BUILDING DEVELOPMENT AGREEMENT FOR DEVELOPMENT OF  
THE GRANVILLE PROPERTY LEGALLY DESCRIBED IN ATTACHED EXHIBIT 1

- (1) Zoning shall be RA 3600;
- (2) Development shall be processed and approved as a Planned Unit Development or Subdivision pursuant to Des Moines Code consistent with the terms and conditions set forth herein and the Settlement Agreement, Waiver, and Release to which this document is appended as Exhibit C.
- (3) Except as otherwise stated herein, the number of units/lots shall not exceed 84 consisting of a mix of 21 single-family residences, 30 duplexes, and 1 triplex. The mix of single-family residences, duplexes and triplexes shall be subject to minor modification at the request of the Applicant, subject to the approval of Des Moines and Federal Way, as provided in paragraph (17) below. Ownership of each unit/lot shall be in fee simple ownership.
- (4) The number, location, type, configuration, and size of units and lots; size, location and configuration of detention; roadway location, width, and length; buffers; general layout; open space; and all other improvements shall be as depicted in the Illustrative Site Plan, dated March 17, 2000, prepared by Peterson Consulting Engineers under Job Number COPD-0001 and attached as Exhibit B ("Illustrative Site Plan") to the Settlement Agreement, Waiver, and Release to which this document is attached as Exhibit C. Minor deviations from said Illustrated Site Plan may occur subject to the approval of Des Moines and Federal Way, provided that the number of lots, units, and building sites shall remain unchanged, except that the number of lots, units, and building sites may be reduced, at the sole discretion of the applicant. The detention, drainage, and road layout reflected in the Illustrative Site Plan may also be changed, subject to approval by the City of Des Moines and the City of Federal Way. In case of conflicts between the Illustrative Site Plan and Des Moines' or Federal Way's zoning, codes, regulations, and land use controls, this Zoning and Development Agreement and the Illustrative Site Plan shall control.
- (5) The City of Des Moines shall provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on the Illustrative Site Plan prior to the City of Des Moines' approval of the Pacific Place Planned Unit Development. Prior to approval, the City of Des Moines shall also provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on any applications for building permits for individual buildings/lots within that portion of the Granville Property contained within the City of Federal Way PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time of any application for a building permit on any lot located on the east side of 15<sup>th</sup> Avenue South. To implement this paragraph, the City of Des Moines shall provide copies of the Illustrative Site Plan, or building permit application, as applicable.

D.J.M.  
*[Handwritten signature]*



to the City of Federal Way, and the 14-day review and comment period shall commence upon Federal Way's receipt of the Plan or application, as applicable.

- (6) The City of Des Moines shall provide to the City of Federal Way 15% of the application fee amount charged to the applicant for any building permit for lots on the Granville Property and located east of 15<sup>th</sup> Avenue South. Payment to Federal Way shall be made within 30 days of Des Moines' receipt of the fee from the applicant.
- (7) 15<sup>th</sup> Ave. S. as depicted in said Illustrative Site Plan shall be dedicated to the City of Des Moines as a public street;
- (8) Development applications that are consistent with the terms of this development agreement shall be deemed to have incorporated design considerations and mitigation measures that are sufficient to avoid probable, significant environmental impacts; accordingly, such application shall be subject to issuance of an MDNS, with no additional conditions other than as set forth herein, and no EIS will be required;
- (9) Previous studies related to wetlands and drainage on the site prepared and submitted to King County under King County Permit Application 807C0270 shall be deemed fully adequate and sufficient and shall be used. No additional studies shall be required. The Parties agree that the documentation provided to the Parties as part of said King County Permit Application 807C0270 is as follows:  
  
Environmental Site Assessment by Earth Consultants, Inc. dated September 23, 1997  
Road Variance by DBM Consulting Engineers dated February 19, 1998  
Subdivision Guarantee by First American Title Insurance Company order no. 345322-5  
Wildlife Study by Wetland Rescues, Inc. dated March 25, 1998  
Level One Drainage Report by Eastside Consultants, Inc. dated August 25, 1997  
Geotechnical Report by J. Keith Cross, P.E., dated May 31, 1997  
Traffic Report by David Hamlin & Associates and subsequent addendums  
Level Two Downstream Analysis by DBM Consulting Engineers dated June 8, 1998  
Technical Information Report By DBM Consulting Engineers dated October 24, 1997  
Wetland Report by Wetland Resources, Inc. dated July 29, 1997.
- (10) The Level 2 Flow Control Standard, as defined in the 1998 King County Surface Water Design Manual, shall apply to detention facilities for the project. No downstream analysis shall be required. The detention facilities for the project shall only need to meet additional drainage demands created by this project. This project shall not be responsible for solving preexisting drainage issues faced by downhill property owners;
- (11) School impact fees (for Federal Way School District) will be collected;
- (12) WSDOT must approve (in writing) any and all entrances and exits proposed to/from Highway 99; provided, however, that Applicant agrees not to seek approval for such entrances and/or exits to or from Highway 99 from the Granville Property;

D. J. M.T.  
H.M.C.



- (13) The market store will be demolished if the property upon which it is located is included within the project;
- (14) The City of Des Moines shall apply, and the applicant and its successors, heirs and assigns shall comply with, the City of Federal Way sign code, Federal Way City Code Sections 22-1596 – 22-1629, or as amended, with respect to that portion of the Granville Property within the City of Federal Way's PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time Granville or its successors, heirs or assigns seek to construct or install any sign.
- (15) The City of Des Moines shall apply, and the applicant shall comply with, the City of Federal Way street development requirements for that portion of Pacific Highway South abutting the Granville Property; provided, however, that the applicant shall not be required to construct street improvements for that portion Pacific Highway South. To mitigate the traffic impacts from the Pacific Place development, however, Granville shall do the following:
- (a) Pay its pro rata share of the cost of the future Transportation Improvement Project ("TIP") known as SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development or Subdivision approval from the City of Des Moines and the expiration of all applicable appeal periods. Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of twenty (20) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>.
  - (b) Pay its pro rata share of the cost of the TIP known as S. 288<sup>th</sup> / SR 99 Intersection Improvements, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development approval from the City of Des Moines and the expiration of all applicable appeal periods. [Note: I added this to clarify timing of payment.] Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of seven (7) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the S. 288<sup>th</sup> / SR 99 Intersection Improvements. *Payment*  
*ABC*
  - (c) As part of the Pacific Place planned unit development, dedicate to the City of Federal Way a 15-foot right-of-way along the east boundary of the Granville Property lying immediately adjacent to and fronting along Pacific Highway South. Provided, that such right-of-way dedication may, at the sole discretion of Granville, contain a reversionary clause, causing the dedicated property, or any portion thereof, to revert back, be re-conveyed, or otherwise transferred to Granville, its heirs, successors, and assigns in the event that the City of Federal Way determines, in its sole discretion, that the dedicated property, or any portion

*D.L.M.*

*U.N. 1-200*



thereof, is not needed for right-of-way purposes at the time of construction of the SR 99 S. 284<sup>th</sup> - S. 272<sup>nd</sup> TIP.

- (16) In recognition of recreation space dedication requirements customarily imposed by the City of Des Moines, the City of Des Moines expressly agrees that Granville shall be given full credit for the total square footage of the 10-foot wide easement granted for construction of the walkway surrounding the wetland located in the middle of said project and the costs of construction for the sidewalk along said walkway.
- (17) In deference to the recreation space improvement requirements customarily imposed by the City of Des Moines, Granville shall make a one-time payment in the amount of \$47,500.00 to the City of Des Moines. As consideration for Granville's agreement to make the full payment of \$47,500.00, the City of Des Moines agrees to increase the maximum number of units allowed by one, to 85, which the Applicant, its sole discretion, can apply to create a single-family residence, duplex, or triplex; provided, however, if Granville is unable or chooses not to increase the maximum number of lots in the final plan to 85, it shall only be responsible for making a one-time payment in the amount of \$35,000.00 to the City of Des Moines as its mitigation fee for recreation space improvements. Arrangements for said payment, if applicable, and written confirmation in the form of an amended site plan reflecting Granville's decision regarding the final number of units and their final placement and configuration, shall be made on or before the date on which the Des Moines City Council is scheduled to vote on Granville's proposed Planned Unit Development as described herein. Said payment, however, shall not be due until final approval of the Planned Unit Development or Subdivision as described herein and the expiration of all appeal periods.
- (18) At the time of construction of 15<sup>th</sup> Avenue South, Granville shall install traffic calming devices, in the form of speed humps, on 15<sup>th</sup> Avenue South within the proposed Pacific Place site and within the Applewood subdivision. The number, location and design of the speed humps shall be as determined by the City of Des Moines and City of Federal Way Public Works Directors, and set forth by Granville on the engineering / construction plans for 15<sup>th</sup> Avenue South.
- (19) No mitigation fees or improvements shall be required as a condition of approval of the Planned Unit Development by the City of Des Moines, except as set forth herein; provided, however, that this agreement does not alter or waive Granville's legal obligation to comply with any and all applicable laws regarding impact fees imposed by the Federal Way School District.

D.L. McIntosh  
11/11/11



## CITY OF DES MOINES, WASHINGTON

Planning, Building, and Public Works Department

21650 11<sup>th</sup> Avenue South, Suite D

Des Moines, WA 98198

Phone: (206) 870-7576 Fax: (206) 870-6544

### NOTICE OF MITIGATED DETERMINATION OF NONSIGNIFICANCE

Notice is hereby given that the City of Des Moines Responsible SEPA Official has determined that the following described proposal is not anticipated to create significant adverse environmental impacts and will not require preparation of an environmental impact statement. This determination shall become final and effective, provided a proper and complete appeal has not been filed, on **December 29, 2007**

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |                   |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|
| APPLICATION SUBMITTAL:                | November 8, 2006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | APPLICATION COMPLETE: | December 4, 2006  |
| DATE OF DECISION:                     | December 4, 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | COMMENT DUE DATE:     | December 19, 2007 |
| PROPOSAL:                             | A request for approval of a plan unit development (PUD) subdivision to divide 12.53 acres into 77 lots for single-family residential use. The request includes deviations the required minimum lot area, lot width, minimum setback requirements, lot width to depth ratio, reduction in the perimeter buffer requirement along 9 of the lots, cul-de-sac over 450 feet long, and reduction in the standard right-of-way width. The proposal also includes Reasonable Use Development Exceptions to fill approximately 5,990 square feet of wetland. |                       |                   |
| PROPONENT:                            | Pacific West Development, LLC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |                   |
| LOCATION:                             | South 279 <sup>th</sup> Street and Pacific Highway South<br>Tax Parcels: 3222049009, 3322049221, 7205400130, 7205400150                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                   |
| FILE NUMBER:                          | LUA06-037                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                       |                   |
| OTHER REQUIRED PERMITS:               | Development Exception: Wetlands<br>Preliminary Planned Unit Development Subdivision                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |                   |
| EXISTING ENVIRONMENTAL DOCUMENTATION: | Environmental Site Assessments, Wildlife Study, Level One Drainage Report, Level Two Downstream Analysis, Geotechnical Report, Traffic Reports, Technical Information Report and Wetland Analysis Report                                                                                                                                                                                                                                                                                                                                             |                       |                   |
| PUBLIC MEETING:                       | The City of Des Moines Planning Agency will conducted a public meeting on <b>January 7, 2007</b> at 7:00 p.m. or as soon thereafter as the matter may be heard in the Council Chambers, 21630 11th Avenue South, Des Moines, WA 98198 for the above referenced project.<br><br>The proposed project requires a Public Hearing with the City Council; however, the date for the public hearing <b>has not been scheduled at this time</b> . Future notices will be provided consistent with the Des Moines Municipal Code.                            |                       |                   |

Written comments concerning the MDNS may be submitted to the Des Moines Planning, Building, and Public Works Department, located at 21630 11<sup>th</sup> Avenue South, Suite D, Des Moines, WA 98198, by 4:30 p.m., **December 19, 2007**. Comments should discuss specific environmental issues associated with this proposal and identify how the MDNS does or does not address those issues. The decision to issue the MDNS may be appealed by filing an appeal consistent with Sections 16.04.210 and 18.94.113, if applicable, of the Des Moines Municipal Code. Appeals must be complete and filed with the City Clerk by 4:30 p.m., on **December 29, 2007**. The appeal letter must cite specific procedural errors, omissions, environmental impacts, inaccurate environmental information or failure to comply with specific adopted policies or codes which dispute the validity of the MDNS.

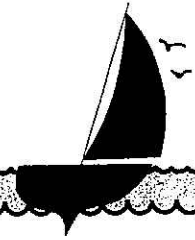
For further information contact Jason Sullivan, Land Use Planner II by phone 206-870-6551 or by email address [jsullivan@desmoineswa.gov](mailto:jsullivan@desmoineswa.gov). Please indicate your name, address, and refer to the file indicated above.

# City of Des Moines



PLANNING, BUILDING AND PUBLIC WORKS  
www.desmoineswa.gov

21630 11TH AVENUE SOUTH, SUITE D  
DES MOINES, WASHINGTON 98198-6398  
(206) 870-7576 FAX (206) 870-6544



December 17, 2007

Dan Lourie  
PO Box 4021  
Kent, WA 98089

Re: LUA06-037; "Pacific Heights Planned Unit Development"

Dear Mr. Lourie:

Involvement of community members is essential during the review phase to ensure the City is aware of the community's concerns. On December 4, 2007, the City issued the attached notice regarding the Pacific Heights Project. As part of that notice you were entitled to receive a notice; however, the City recently became aware that you did not receive your notice. It is unclear why you did not receive this notice, but for the purposes of obtaining your participation, the City is providing you a copy of the original notice and extending the Public Comment period from December 19, 2007 to December 31, 2007 to provide you additional time to comment on the proposal. The appeal period will also be extended from December 29, 2007 to January 10, 2007.

The City is committed to ensuring that proposed projects are sensitive to the needs and concerns of the community. If you have any questions or need further assistance, please feel free to contact me by phone at (206) 870-6551 or by email at [jsullivan@desmoineswa.gov](mailto:jsullivan@desmoineswa.gov).

Sincerely,



Jason Sullivan  
Land Use Planner II



City of Des Moines  
21630 11<sup>th</sup> Ave. S Suite D  
Des Moines, Wa 98198-6398

Dan Lourie LCI  
PO Box 4021  
Kent Wa.98089

December 29 2207

Subject; Comments regarding MDNS of “Pacific Heights PUD”  
File # LUA06-037

Attn: Jason Sullivan

I am the owner of three adjacent tax lots south and within 300 feet of the proposed  
“Pacific Heights PUD”. They are identified as follows: 28323 Tax ID 332204-9120-07  
28313 “ “ 332204-9062-07  
28303 “ “ 332204-9040-04

I believe an error has been made by not providing for needed utilities and appropriate  
access to surrounding properties. I would believe this would be a key issue in Des Moines  
and Federal Way’s comprehensive plan. I notice a right of way was extended to the west  
to provide future access and utilities to tax lot #322204-9034. This adjoining tax lot  
already has access from S282nd PL and to the south by S284th. I realize my property is  
now in Federal Way but there should be a process for planning across borders. An  
additional factor is the State Hwy 99 widening and imposing wall which makes the  
HWY99 access possibly impracticable. I believe both Federal way and Des Moines  
Transportation department should give consideration on traffic flows as well.

In summary I would like equal consideration of my property as was given to the  
property east of Applewood, “tax lot #322204-9034”. Thank you

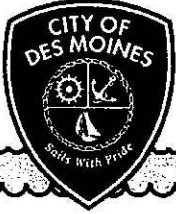
Dan Lourie Pres LCI

Do we really need a sub division this big in a declining housing market bringing more traffic to the area? Plus filling in wetlands when we have to save an area of blackberry bushes to comply with rural codes. This is just a bad idea only brought forth by some guy to make money at the expense of more traffic, crime, declining way of life here. we do not need to saturate this area with more housing, like my god we are so stacked and packed as it is do we really need this just so the des moines can tax more people to fund some pork barrel project ? I vote no! so just say no to file #LUA06-037!

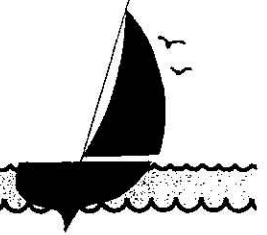
We do not need the extra hassle and people here,

Scott Isenberg

# City of Des Moines



PLANNING, BUILDING AND PUBLIC WORKS  
www.desmoineswa.gov  
21630 11TH AVENUE SOUTH, SUITE D  
DES MOINES, WASHINGTON 98198-6398  
(206) 870-7576 FAX (206) 870-6544



December 19, 2007

Re: LUA06-037; "Pacific Heights Planned Unit Development"

Dear Resident:

Thank you for taking the time to provide comments regarding the proposed Pacific Heights Project. Involvement of community members is essential during the review phase to ensure the City is aware of the community's concerns. The City is committed to ensuring that proposed projects are sensitive to the needs and concerns of the community.

Either during the August 16, 2007 Community Meeting or one of three public comment periods you either submitted written comments to the City expressing a concern(s) about the Pacific Heights project or requested simply to be included on the correspondence list. Below is a list of the concerns that were provided to the City and the City's response to each of those concerns:

## TRAFFIC STUDY

1. **Concern:** The City of Des Moines was relying on a 1998 Traffic Study to evaluate the impacts of the proposed Pacific Heights Project on the adjacent neighborhoods.

**Response:** The City of Des Moines had concerns with the 1998 study given age of the study, changes in the project, and changes to the street network. In order to fully understand the impacts the City of Des Moines hired a Traffic Consultant to prepare a Traffic Impact Assessment and identify needed mitigation measures for the neighborhood. A copy of this report is available on the City of Des Moines website at the following link [http://www.desmoineswa.gov/dept/development/plan/dev\\_activity.html](http://www.desmoineswa.gov/dept/development/plan/dev_activity.html).

## TRAFFIC CIRCULATION

1. **Concern:** The reconfiguration of the 16<sup>th</sup> Avenue South, South 279<sup>th</sup> Street, and Pacific Highway Intersection will significantly increase the amount of traffic in the Redondo Riviera Neighborhood if the Pacific Heights project is approved by the City.

**Response:** Based on the updated Traffic Impact Assessment, staff will be requesting that the City Council require the installation of traffic calming measures in Redondo Riviera to mitigate for the increase traffic within the neighborhood. Traffic calming is already required for the Applewood neighborhood.

2. **Concern:** The new connection between South 279<sup>th</sup> Street and 15<sup>th</sup> Avenue South in Applewood has not been necessary for the last 18 years; why is the connection needed now?

**Response:** The proposed connection has been planned since the earlier 90's when the Applewood Subdivision was approved by King County. The recorded Applewood Plat shows the cul-de-sac as temporary and is partially located on private property. Additionally, the connection was shown on the original Pacific Place (now Pacific Heights) layout in the

mid 90's. Both the Cities of Federal Way and Des Moines agree with the connection as a general engineering practice.

3. **Concern:** The new connection will create substantial amounts of cut-through traffic to avoid traffic on Pacific Highway.

**Response:** Based on the original traffic study and the new traffic impact assessment, the extension of 15<sup>th</sup> Avenue South to South 279<sup>th</sup> Street will not create a practical or viable route for traffic attempting to avoid Pacific Highway.

4. **Concern:** There should be a connection to tax parcels 3322049120, 3322049062, 3322049040 via the private access tract within the proposed subdivision.

**Response:** The Cities can not require that the applicant provide access to the above tax parcels via the private access tract as a condition of approval due to restrictions limiting jurisdictions from mitigating existing conditions not created by the proposed development and the terms of the settlement agreement.

## DENSITY

1. **Concern:** How was the density for the project determined or the density exceeds the maximum density allowed in the zone.

**Response:** The majority of the property is located within the City of Des Moines (9.2 acres) and is zoned RS-7200 Residential: Single Family 7,200. The other 3.33 acres of the site is within the City of Federal Way of which 2.87 acres are zoned RM-1800: Multifamily 1 unit per 1,800 square feet and 0.46 acres are zoned RS7.2: Single Family 1 unit per 7,200 square feet. The Des Moines Comprehensive Plan designated the majority of the property as SF: Single Family. The other portion of the site within the City of Federal Way is primarily designated as Multifamily and the other smaller portion as Single Family, High Density by the Federal Comprehensive Plan. Based on the zoning information and the limited density transfer provisions for the protection of environmentally sensitive areas established by DMMC 18.86.090, the maximum number of units allowed on the site is 114. The proposed development includes the development of 77 housing units which is less than the allowable maximum density.

## NATURAL ENVIRONMENT

1. **Concern:** The project will have a negative impact on the wetlands currently located on the subject property and the Wetland Study was completed in 1997.

**Response:** The wetland methodology used in the 1997 wetland study was the same methodology that the City would have used if the application been submitted for the first time on November 8, 2006. The project will have an impact on one of the wetlands; however, the fill of this wetland will be mitigated by the creation of additional wetland adjacent to the remaining wetland. The filling of one of the wetlands will not violate the Des Moines Municipal Code.



2. **Concern:** The project will have a negative impact on the wildlife on the property.

**Response:** According to the Wildlife Study prepared by Wetland Resources dated March 25, 1998 portions of the site do contain some wildlife habitat; however, these habitat areas are less than optimal due to the high degree of historical human intervention. Therefore, the level of wildlife usage is below the levels that would be expected given the size of the property. The site is primarily used by small mammals birds, and amphibians for foraging and habitation. The site is also completely surrounded by development which has further limited the use of the site by wildlife. Finally, the site contains no species of animals or plants that are listed as endangered or threatened species by the State of Washington or the Federal Government.

3. **Concern:** The soil on the site is contaminated.

**Response:** Based Environmental Site Assessment dated September 23, 1997 prepared by Earth Consultants, the previous owner excavated and sold gravel from the property. Grading permit documentation reviewed during the preparation of the Environmental Site Assessment indicated that fill materials were placed both on the northeast part and on the south central part of the subject property at various periods throughout the 1980s. Documentation on the fill material indicated that it was primarily construction excavation soil and demolition concrete and asphalt rubble. Based on the historical land uses and potential soil contamination Earth Consultants collected soil samples to determine if soil was contaminated and if the contamination exceed the clean up levels established by the Model Toxics Control Act. The results of the soil test showed that no HVOCs, PCBs, pesticides, or herbicides were detected in any of the samples submitted for analysis. Concentrations of oil [measured in units called Total Petroleum Hydrocarbons (TPHs)] detected in samples TP-1-1 (120 mg/kg) and TP-2 (150mg/kg), were below the Model Toxics Control Act (MTCA) Soil Cleanup Level of 200 mg/kg for TPHs. The Phase 6 Environmental Site Assessment concluded no environmental hazards existing on the site that would limit the development of the property.

## DRAINAGE

1. **Concern:** The proposed development will create drainage problems for the adjacent neighborhoods.

**Response:** Surface Water Management staff has reviewed the Preliminary Plat Plans and the Preliminary Technical Information Report (TIR) prepared Peterson Consulting Engineers dated November 2006; revised March 2007 and June 2007. Per the Agreement, the 1998 King County Surface Water Design Manual was applied to the project. Based on the review of the plans, specifications and technical reports, staff has determined that the below described facilities are consistent with the 1998 King County Surface Water Design Manual.

Stormwater from the site is collected and conveyed to a detention/treatment vault that is appropriately sized to sufficiently detain surface water runoff and meets the Basic Water Quality Menu for treatment. The proposed location for the storm facility will be located within the subdivision and stormwater exiting the facility will be dispersed prior to discharging at the "natural discharge location" of the site, the location where runoff leaves the site under existing site conditions, as defined by the King County Manual.

## HOUSING TYPE

1. **Concern:** The homes will be used for subsidized housing or section 8 housing.

**Response:** The applicant has not submitted any information to the City indicating that the housing will be subsidized housing.

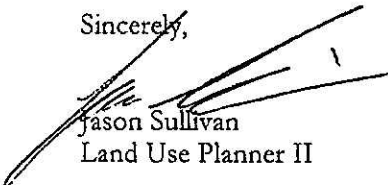
2. **Concern:** The type of units proposed creates a multifamily housing development in a single family zone.

**Response:** The original Pacific Place project (now named Pacific Heights) was initiated while in King County and consisted of a 120 Unit Condominium which the City of Des Moines believed was inconsistent with the surrounding single family land uses. Soon after the annexation was approved, Granville Southern filed an appeal of the annexation decision with the King County Superior Court. In order to settle the litigation, The Cities of Des Moines and Federal Way, along with Granville Southern and Donald and Marie Tavis entered into the Agreement in 2000. This Agreement attempted to balance the City's use compatibility concerns about multifamily residential condominium buildings in a single family zoned area while maintaining a majority of the entitled density under the original application. The Agreement envisioned a proposed development pattern that is considered attached single family which is more compatible with the surrounding neighborhoods. This compromise preserved a fundamental difference between multifamily residential units and single family homes: land ownership. In the attached single family home development each home is located on its own lot and is owned fee simple in the same manner as the detached single family homes in the surrounding neighborhoods.

The applicant has also applied for a Planned Unit Development (PUD) which is a permitted use in the Single Family Zone (RS-7200) pursuant to DMMC § 18.08.020(16). Within a PUD the applicant is authorized to cluster homes on smaller lots as long as the PUD's density is consistent with the density for the underlying zone. Additionally, the applicant can have attached units within the PUD pursuant to DMMC 18.52.080. Therefore, the project is consistent with the permitted uses established by the underlying zoning classification.

Thank you for your comments regarding this project. If you have any questions or need further assistance, please feel free to contact me by phone at (206) 870-6551 or by email at [jsullivan@desmoineswa.gov](mailto:jsullivan@desmoineswa.gov).

Sincerely,



Jason Sullivan  
Land Use Planner II

CC: Dan Brewer – Assistant Public Works Director for Transportation and Engineering  
Loren Reinhold - Assistant Public Works Director for Utilities and Environment

City of Federal Way  
Attn: Deb Barker – Senior Planner  
PO Box 9718  
Federal Way, WA 98063-9718

JAN 10 2008

City of Des Moines  
21630 11<sup>th</sup> Ave. S Suite D  
Des Moines, Wa 98098-6398

Dan Lourie LCI  
PO Box 4021  
Kent WA 98089  
206-391-8750

January 10, 2008

Subject; Appeal MDNS of File# LUA06-37 "Pacific Heights PUD"  
Proponent: Pacific West Development, LLC

To Whom It May Concern:

This appeal from a position of Federal Way and Des Moines together not following a comprehensive plan of development. That goal is to encourage uniform development of an integrated fully accessible public transportation system that will facilitate present and future travel demands with minimal environmental impact to the community as a whole.

The layout of streets should provide for the connectivity of existing streets in adjoining subdivisions or their proper projection when adjoining property is not subdivided.

My grievance is that a new 50 foot ROW is being proposed to connect tax parcel #3222049010 to the west providing a 3<sup>rd</sup> ROW access point to the tax lot. Tax lot # 3222049010 already has access by S282nd PL and S. 284th ST.

The comprehensive plan of Federal Way & Des Moines would be better followed by switching the ACCESS TRACT C going to the east of 15<sup>th</sup> AVE. S. with the 50 foot ROW going west to tax lot #3222049010. It is redundant to add another ROW to Tax lot#3222049010 and then ignore a more needed connecting street to my tax lots: 332204-9120, 3322049062, and 332204-9040.

Thank you for your consideration.

Dan Lourie  
Pres LCI



Community Development Department  
Building Division

Fee Receipt

Copy Reprinted on 01-10-2008 at 16:26:41

RECEIPT NUMBER: R08000048  
Paid By: LOURIE CONTRACTING, INC PO BOX 4021 KENT, WA 98089  
Payment Type: Check  
Check No.: 10611

APD #: TR08-0018 TYPE: Misc. Transaction

ACCOUNT CODE: 000.369.90.00.00

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NAME: DAN LOURIE

LOCATION: APPEAL MDNS OF LUA06-37

TRANSACTION DATE: 01/10/2008

ITEM TYPE:

ITEM DESCRIPTION: Miscellaneous

QUANTITY: 1

SUB-TOTAL: \$800.00

TAX: \$0.00

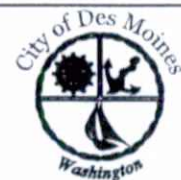
TOTAL: \$800.00

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# Hypothetical Road Area

## Lourie Properties

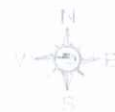


### City of Des Moines SEPA Map

#### Des Moines City Limits

#### Pacific Heights PUD

- Proposed Lot Lines
- PUD Boundaries
- Wetland



21630 11th Ave S  
Des Moines, WA 98198-6398  
PHONE: (206) 878-6595 | FAX: (206) 878-7626  
WEB: <http://www.desmoineswa.gov>

File: Combined\_Map.mxd  
Map generated: Oct 26, 2007  
Product of City of Des Moines GIS



CITY HALL  
33325 8th Avenue South  
Mailing Address: PO Box 9718  
Federal Way, WA 98063-9718  
(253) 835-7000  
[www.cityoffederalway.com](http://www.cityoffederalway.com)

January 31, 2008

City of Des Moines  
Attn: SEPA Official  
21630 11<sup>th</sup> Ave S, Suite D  
Des Moines, WA 98198

**RE: *City of Federal Way Response to the Appeal of the Pacific Heights Plat MDNS  
LUA 06-037***

Dear SEPA Official:

The City of Federal Way has received and reviewed Mr. Dan Lourie's January 10, 2008 appeal to the Pacific Heights Plat MDNS and has the following comments:

This Pacific Heights Plat project is located in Des Moines with a small portion located in Federal Way. All three tax lots (#3322049040, #3322049062 and 3322049120) referenced in Mr. Dan Lourie's appeal are located in Federal Way and front Pacific Highway South, which would provide these lots with vehicular access. Any proposed access to Pacific Highway South would be reviewed in detail by the City of Federal Way following the submittal of a development application. Existing access controls along Pacific Highway South would limit the subject properties to a "right in and right out" configuration. Other access concerns such as safety, grading and drainage would also have to be addressed with the development application.

The City of Federal Way cannot require that a public road be dedicated and constructed to provide access to an adjacent property. Therefore the matter of obtaining access to the above referenced parcels through the proposed Pacific Heights Plat must be reviewed and approved by the Plat developer, the City of Des Moines, and the City of Federal Way, consistent with adopted standards and the signed settlement agreement. However, Federal Way would not be opposed to considering access through the Pacific Heights Plat.

Please contact Will Appleton, P.E., Development Services Manager, if you have any questions about this letter. You can reach him directly at 253.835.2730.

Sincerely,

A handwritten signature in black ink that reads "Ken Miller".

Ken Miller, P.E.  
Deputy Public Works Director

WA/KM:su

Cc: Jason Sullivan, Land Use Planner II, City of Des Moines, 21630 11<sup>th</sup> Ave S, Suite D, Des Moines, WA 98198  
Dan Brewer, Assistant PW Director for Transportation & Engineering, City of Des Moines, 21630 11<sup>th</sup> Ave S, Suite D, Des Moines, WA 98198  
Robert Ruth, Development Services Manager, City of Des Moines, 21630 11<sup>th</sup> Ave S, Suite D, Des Moines, WA 98198  
Will Appleton, P.E., Development Services Manager  
Deb Barker, Senior Planner  
Project File  
Day File

## **FINDINGS OF FACT**

### **PACIFIC HEIGHTS SEPA APPEAL**

**February 28, 2008**

The Des Moines City Council, upon review of materials submitted to the City Council in the Staff report dated February 28 2008 for the appeal of the City's SEPA Official MDNS Determination and in consideration of information communicated during an appeal hearing hereby finds:

1. A MDNS was issued in accordance with WAC 197-11-350 and DMMC 16.04.110 on December 4, 2007.
2. A public comment period for the MDNS was provided from December 4, 2007 to December 31, 2007 for the SEPA determination.
3. The appeal period for the MDNS was provided from January 1, 2008 to January 10, 2008.
4. An appeal of the City's SEPA Official's MDNS Determination was filed on January 10, 2008 by Mr. Dan Lourie.
5. Mr. Lourie is appealing the City's environmental determination arguing that the City should have required the developer to widen Tract C to provide access to the appellant's property and in failing to do so, the City has not followed the City's Comprehensive Plan.
6. Mr. Lourie does not have access via the proposed project currently and will not have access after the project.
7. Mr. Lourie has direct access to his properties from Pacific Highway south also known as SR-99.
8. Mr. Lourie's properties have approximately 660 feet of frontage along Pacific Highway South.
9. The City of Federal Way has confirmed that Mr. Lourie can access his properties from Pacific Highway South, once a development application is submitted to the City of Federal Way.
10. Existing access to Mr. Lourie's property is not altered or impacted as a result of the proposed development.



11. The properties in question contain 99,666 square feet and are zoned RM1800, which has a development potential of 55 multifamily units.
12. Determination on where and how local traffic circulation connections are to be provided is a design issue that relates to serving the best overall public interest; not benefiting a select few individual property owners.
13. "Significant" as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environmental quality pursuant to WAC 197-11-794.
14. "Impacts" are the effects or consequences of actions. Environmental impacts are effects upon the environment pursuant to WAC 197-11-752.
15. "Mitigation" as defined by WAC 197-11-768 means:
  - a. Avoiding the impact altogether by not taking a certain action or parts of an action;
  - b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
  - c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
  - e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
  - f. Monitoring the impact and taking appropriate corrective measures.
  - g. Pursuant to Sub point 8 of Exhibit C the Agreement the City agreed not to require mitigation in the SEPA decision other than the mitigation identified in the Agreement.



- h. In order to make the changes requested by the appellant, modifications to the Illustrative Plan would be required and these changes would have to be approved by the Cities of Des Moines and Federal and the applicant (Pacific West LLC).

## **SEPA APPEAL CRITERIA/PROCESS**

### **(DMMC § 16.04.210)**

(1) Definitions.

- (a) Use of Words and Phrases. As used in this section, unless the context or subject matter clearly requires otherwise, the words and phrases defined in this section shall have the indicated meanings.
- (b) “Agency” means the city of Des Moines.
- (c) “Appeal” means the process by which a SEPA determination is contested.
- (d) “SEPA determination” means a SEPA procedural determination or a SEPA substantive determination.
- (e) “SEPA procedural determination” includes the adequacy of a determination of significance/nonsignificance or of a final environmental impact statement.
- (f) “SEPA substantive determination” includes a decision to require particular mitigation measures or to deny a proposal.
- (g) “Underlying governmental action” means the final decision of the agency on a proposal.

(2) The appeal described in this section is mandatory. Failure to comply strictly with the requirements of this section is considered a failure to exhaust administrative remedies and shall foreclose any further agency or judicial appeal.

(3) The appeal is initiated by filing a written appeal with the city clerk within 10 days of the date the SEPA determination is final. In the case of an appeal to the hearing examiner, the appeal will not be considered filed unless accompanied by the appropriate fee.

(4) The written appeal shall contain the following:

- (a) A description of the determination being appealed, including the file number;
- (b) The name and address of the appellant; and
- (c) A detailed statement identifying specifically the reasons why the appellant considers the SEPA determination to be inadequate.

(5) There shall be a single agency appeal of a SEPA determination:

- (a) If the underlying governmental action is taken by the city council, the appeal is heard by the city council and is consolidated with the consideration of the underlying governmental action.
  - (b) If the underlying governmental action is taken by the hearing examiner, the appeal is heard by the hearing examiner and is consolidated with the consideration of the underlying governmental action.
  - (c) If the underlying governmental action is administrative, the appeal is heard by the hearing examiner.
  - (d) If the appeal is from a determination of significance, the appeal is heard under all circumstances by the Superior Court of Washington for King County as specified by chapter 36.70C RCW.
- (6) An appeal taken to the hearing examiner is considered an appeal from an administrative decision and is processed accordingly under the provisions of the hearing examiner code, except the decision of the hearing examiner is final and is not appealable to the city council.
- (7) Procedural determinations made by the responsible SEPA official shall be entitled to substantial weight.
- (8) An adequate record shall be made of all appeals taken under this section. An adequate record consists of findings and conclusions, testimony under oath, and taped or written transcripts.
- (9) The city shall give official notice under WAC 197-11-680(5) when it issues a permit or a decision for which a statute or ordinance establishes a time limit for commencing judicial appeal.

## AGENDA ITEM

### BUSINESS OF THE CITY COUNCIL City of Des Moines, WA

SUBJECT: Pacific Heights Planned Unit  
Development (PUD) Subdivision : City File  
Number LUA06-037

ATTACHMENTS:

1. Settlement Agreement
2. Orthophoto Map
3. Zoning Map
4. Preferred Land Use Map
5. Public Comments
  - a. 1<sup>st</sup> Public Comment Period
  - b. 2<sup>nd</sup> Public Comment Period
  - c. August 16, 2007 Meeting
  - d. SEPA Comments
6. City's Comment Response Letter
7. Feb. 4, 2008 Planning Agency Minutes
8. SEPA Appeal Letter
9. DMMC § 17.16.130
10. Des Moines Comprehensive Plan Goals
11. Des Moines Comprehensive Plan  
Policies/Strategies
12. Environmental Studies
  - a. 1998 Traffic Study
  - b. 2007 Traffic Study
  - c. 2007 Technical Information Report
  - d. 1998 Level 2 Downstream Analysis
  - e. 1997 Wetland Delineation Report
  - f. 1998 Wildlife Study
  - g. 1997 Geotechnical Report
13. Draft Resolution 08-004
14. Illustrative Site Plan
15. Preliminary PUD Plans

FOR AGENDA OF: February 28, 2008

DEPT. OF ORIGIN: Planning, Building, &  
Public Works

DATE SUBMITTED February 20, 2008

CLEARANCES:

[X] Planning, Building & Public Works  
[X] Legal

APPROVED BY CITY MANAGER FOR  
SUBMITTAL: \_\_\_\_\_



### **Purpose and Recommendation:**

The purpose of this agenda item is to facilitate the City Council's consideration of the proposed preliminary Planned Unit Development ("PUD") subdivision entitled "Pacific Heights."

During the public hearing, the focus of the City Council's efforts will be to:

- 1) Take public testimony regarding the proposed Pacific Heights project.
- 2) Review the proposed PUD and determine if it is consistent with the terms of the *Settlement Agreement, Waiver and Release By and Between Granville Southern Corporation, Donald & Marie Tavis, and the Cities of Des Moines and Federal Way* (the Agreement), and either approve or deny any requested changes to the Illustrative Site Plan contained in Exhibit C of the Agreement (the Illustrative Plan). As part of the Agreement the City agreed to limit the review of the project to the terms of the Agreement instead of the City's Municipal Code (this requirement is explained in more detail in the Background section).

The information contained in this staff report includes an analysis of the proposed preliminary PUD subdivision in relation to the Agreement and provisions of the Subdivision Code, the Zoning Code, the Des Moines Comprehensive Plan, and the City Street Development Standards. A comparative analysis to Title 17 and 18 of the Des Moines Municipal Code is provided to evaluate how the proposal does and does not align with the requirements established by those titles. This analysis however, does not relieve the City of its obligation to comply with the terms of the Agreement. If the City Council determines that the project is consistent with the Agreement and the proposed modifications are acceptable, the City Council may approve the proposed preliminary PUD subdivision by passing the following motion:

### **Suggested PUD Approval Motion**

**Motion:** "I move to adopt Draft Resolution 08-004 included as Attachment 13 to the February 28, 2008 Administration Report approving a Planned Unit Development Subdivision entitled Pacific Heights including modifications to the Illustrative Site Plan included as part of the Agreement as illustrated in Exhibit B of Draft Resolution 08-004."

### **Background:**

On August 13, 1998, the Boundary Review Board (BRB) issued a decision approving the annexation of property known as the Redondo Riviera Annexation Area in to the City of Des Moines. This included property owned by Granville Southern Company and Donald and Marie Tavis. At the time of the annexation, Granville Southern Company had a vested application for a project known as Pacific Place (King County Permit Application 807C0270) filed and under review with the King County Department of Development and Environmental Services. Pacific Place was transferred to the City of Des Moines for permit processing since the proposed project would be primarily located in Des Moines and only partially in the potential annexation area of Federal Way. Staff was concerned that the proposed project (100 Unit Condominium) was inconsistent with the surrounding single family land use and expressed these concerns to the King County Department of Development and Environmental Services prior to annexation.



Soon after the annexation was approved, Granville Southern Company filed an appeal of the BRB's annexation decision with the King County Superior Court. In order to settle the litigation, the Cities of Des Moines and Federal Way, along with Granville Southern Company and Donald and Marie Tavis entered into the Agreement which was executed by the Cities of Des Moines and Federal Way in August of 2000 and the other parties by March of 2003. This agreement established guidelines for future review of the proposed Pacific Place development. This Agreement attempted to balance the City's use compatibility concerns about multifamily residential condominium buildings in a single family zoned area while maintaining a majority of the entitled density under the original application. The Agreement envisioned a proposed development pattern that is considered attached single family which is more compatible with the surrounding neighborhood uses. This compromise preserved a fundamental difference between multifamily residential units and single family homes: land ownership. In the attached single family home development each home is located on its own lot and is owned fee simple in much the same manner as the detached single family homes in the surrounding neighborhoods.

No real and sustained progress was made on the application until late 2005 when Granville Southern Company sold the project. In the early part of 2006, the City of Des Moines was contacted by the new owners of the property and project, Pacific West LLC, to discuss the steps needed to complete the Pacific Place project. The new owners submitted all materials necessary to allow for the review of the project to continue. The project was renamed Pacific Heights.

On December 4, 2006, Development Services determined that the application materials necessary to begin the review the Pacific Heights preliminary PUD subdivision and all studies identified in the sub-section 4F of the Agreement had been submitted to the City. The application specifically requests to divide 4 existing tax parcels consisting of 12.93 acres into 14 detached single family residential lots and 63 attached single family lots. Please refer to the Orthophoto Map (Attachment 2) for further details regarding the proposed site location.

The property is located within three jurisdictions: the City of Des Moines (8.79 acres), the City of Federal Way (3.33 acres) and Unincorporated King County (0.41 acres). The property in Des Moines is zoned RS-7200 Residential: Single Family 7,200. The property within the City of Federal Way is primarily zoned RM-1800: Multifamily 1 unit per 1,800 square feet (2.87 acres) and the other smaller portion (0.46 acres) is zoned RS7.2: Single Family 1 unit per 7,200 square feet. The small portion in King County only constitutes the extension of 15<sup>th</sup> Avenue South and is not shown on the official King County zoning map; however, the property was historically zoned R6 which is similar to the City's RS-7200 zone.

The Des Moines Comprehensive Plan designates all of the property in Des Moines as SF: Single Family. The other portion of the site within the City of Federal Way is primarily designated by the Federal Way Comprehensive Plan as Multifamily and the other smaller portion as Single Family, High Density. The small portion in King County is not shown on the official King County Comprehensive Land Use Map.

A list of the surrounding land uses, zoning classifications, and preferred land uses is provided below:



| <i>EXISTING LAND USE:</i>       | <i>ZONING:</i>          | <i>PREFERRED LAND USE:</i>                   |
|---------------------------------|-------------------------|----------------------------------------------|
| <i>North:</i> Single Family     | <i>North:</i> RS - 7200 | <i>North:</i> Single Family                  |
| <i>South:</i> Single Family     | <i>South:</i> RS 7.2    | <i>South:</i> Single Family;<br>High Density |
| <i>East:</i> Multifamily Family | <i>East:</i> RM-1800    | <i>East:</i> Multifamily                     |
| <i>West:</i> Single Family      | <i>West:</i> RS - 7200  | <i>West:</i> Single Family                   |

Please refer to the Zoning Map (Attachment 3) and the Preferred Land Use Map (Attachment 4) for further details.

Grades on the site are primarily gently sloping (slopes of 0 to 6%) from the east to the west; however, along the eastern portion of the property there is a moderate to steep hillside that slopes down from Pacific Highway South. Grades adjacent to Pacific Highway approach 40%. The eastern and western one-third of the site is forested with mixed evergreen and deciduous trees. Dense brush, small trees, and vines are located beneath the tree canopy. The central third of the property is covered by a wetland on the northern portion and a fill area covered with tall grass and weeds on the southern part. Dense blackberry vines and several fruit trees are located along the east side of the central fill and wetland area.

The property was undeveloped until it was used as a rural farm from the late 1940s until approximately 1995. Farm buildings were removed from the site in 1995 leaving the property in its current vacant undeveloped state.

#### PUBLIC COMMENTS

On August 6, 2007, the City issued a notice of complete application with an associated 15 day public comment period; however, the applicant failed to install the required Land Use Action signs. During this first comment period the City did receive written comments from the public which are included as Attachment 5a. On October 8, 2007 the City reissued the public notice of complete application with a new 15 day public comment period. During this second comment period the City received 3 comment letters (Attachment 5b). The primary concern expressed in these comment letters pertained to the connection of Applewood to South 279<sup>th</sup> Street via the extension of 15<sup>th</sup> Avenue South.

In addition to written solicitations from surrounding tenants and property owners, the City conducted an open house meeting with the neighborhood residents on August 16, 2007. Staff discussed the project with the residents directly affected by the proposed project at this meeting. During the meeting the City received 14 written comments. Copies of the comments are included as Attachment 5c. A summary of the concerns expressed at this meeting is provided below:

1. Too much traffic coming through Applewood
2. Too much new traffic through 279<sup>th</sup>/13<sup>th</sup>/Redondo Riviera corridor
3. Hazard at corner of 13<sup>th</sup> /276<sup>th</sup>
4. Bad traffic light timing at 288<sup>th</sup> /Pac Hwy
5. Want traffic calming (speed bumps, chicanes, traffic circles) (Applewood)
6. Want updated Traffic Study
7. Want widening of 288<sup>th</sup>/16<sup>th</sup> intersection with sidewalk improvements
8. Want street lights in Applewood
9. Concerned about wetlands
10. Concerned about wildlife
11. High density of development
12. Soil stability
13. Soil contamination
14. Concern about elevation of neighboring properties
15. Want drainage and critical area studies
16. Concerned about noise
17. Consider creating northbound connection from S. 279<sup>th</sup> St. to 16<sup>th</sup> Ave. S.
18. We weren't notified
19. Fire safety in Des Moines corridor

Staff prepared a master letter to respond to all the comments received by the City. A copy of this letter is included as Attachment 6. Staff believes that all issues raised have been addressed and no outstanding issues remain.

### SEPA

PUD subdivisions are not contained on the list established by WAC 197-11-800 and DMMC 16.04.230 of development activities categorically exempted from the State Environmental Policy Act (SEPA); therefore, the applicant was required to submit an Environmental Review Application. The SEPA checklist was reviewed by City Staff along with special studies to determine if significant adverse environmental impacts were likely. It was determined that mitigation for some identified impacts was warranted. The SEPA Official subsequently issued a final threshold determination of a Mitigated Determination of Non-Significance (MDNS) on December 4, 2007. The comment period for the MDNS notice and appeal concluded on December 31, 2007 with two comments (Attachment 5d). The appeal period concluded on January 10, 2008 with one appeal filed (Attachment 8).

### PUD APPROVAL PROCESS REQUIREMENTS

As part of the Agreement, the parties agreed that the City would review the proposal utilizing the City's PUD process for comparative purposes; however, the standards for review would be limited to ensuring the project is consistent with the terms of the Agreement pursuant to sub-section 4F of the Agreement. Review of the preliminary PUD subdivision is a Type IV land use action as defined by DMMC §18.56.060. A Type IV land use action requires a public meeting



with the Planning Agency and a public hearing with the City Council pursuant to DMMC § 18.56.180.

### PLANNING AGENCY

On February 4, 2008, the Planning Agency conducted the required public meeting and recommended that the City Council approve the Pacific Heights proposal including the proposed modifications. The Planning Agency also took public comments during the meeting. These comments primarily focused on the increase in the amount of traffic that could result from the project. A complete description of the comments and staff's response are provided in the Planning Agency meeting minutes included as Attachment 7.

### **Discussion:**

### SETTLEMENT AGREEMENT

When the City entered into the Agreement, the City agreed to limit its review of the project to a determination of whether or not the project complies with the terms and exhibits contained in the Agreement pursuant to Section 4F. Therefore, City action and review authority for the PUD is limited. The City does not have the authority to require the developer to make changes to the proposed layout according to the Agreement. Staff, however, has requested and the applicant has agreed to make the following transportation-related changes to the original layout:

1. 14<sup>th</sup> Place South ROW was widened from 30 feet to 50 feet to allow the installation of curb, gutter and sidewalk on both sides of the street.
2. Tract C was relocated to the intersection of 15<sup>th</sup> Avenue South and South 282<sup>nd</sup> Street to provide a safer access point to the private street.
3. The Right-of-Way (ROW) width for 15<sup>th</sup> Avenue South was reduced from 56 feet to 50 feet since the additional ROW is not required for the necessary improvements.
4. The lots north and south of Road A have been re-configured on the revised site plan due to the relocation of the access road.

The applicant has also made the following changes to the layout of the proposed lots:

1. On the revised site plan lots 60 – 63 and the detention tract have swapped locations.
2. The widths of the lots that front on 15<sup>th</sup> Avenue South along the eastern perimeter of the proposed development shown on the revised site plan are approximately 10 feet narrower than the lot widths shown for the same area on the illustrative site plan contained as Exhibit B of the Agreement.

3. The width of the street frontage for lots 46 – 51 on the revised site plan are approximately 2 – 5 feet narrower than the width of the street frontage shown on the illustrative site plan contained as Exhibit B of the Agreement.

Staff believes these changes are necessary to facilitate the construction of streets that are consistent with the City's adopted Street Standards and are substantially consistent with the terms of the Agreement.

While the City's official review is limited by the Agreement, staff believed it was important to compare the proposal to the DMMC to enable the public and the City Council to understand where departures exist. The following review is for informational purposes only and cannot be used as part of the evaluation of the proposed project pursuant to the terms of the Agreement.

#### PUD SUBDIVISION

Typically review of the proposed preliminary PUD subdivision is to determine if the proposed project is consistent with the criteria established by DMMC § 17.16.130(2) (Attachment 9) and DMMC 18.52.010. In this project review, staff is simply comparing and contrasting the proposal under the Agreement utilizing the typical PUD process. The proposed project includes the following deviations to the City's subdivision regulations codified in Chapter 17.36 DMMC and zoning regulations codified in Chapter 18.08 DMMC:

#### **Subdivision Layout and Design Deviations (chapter 17.36 DMMC)**

- (1) Minimum lot width and depth to maintain standard width to depth ratio is not met for all lots except for lots 6, 32, 63, 66, and 77.
- (2) All lots meet the 20' minimum frontage requirement except for lots 7 – 8 and 47 – 53.
- (3) Corner lots are not 5 feet wider than the 60 foot minimum width established by the subdivision code.
- (4) Road B will be over 150 feet in length as measured from the centerline of Road A and will not have a cul-de-sac turnaround.
- (5) The right-of-way width for 15<sup>th</sup> Avenue South is reduced to 50 feet from 60 feet.
- (6) Road A will be a cul-de-sac road over 450 feet in length.

#### **Zoning Code Deviations (Chapter 18.08 DMMC)**

- (1) Minimum lot area will be less than 7,200 square feet on all lots. The average lot size within the PUD is 3,779 square feet.



- (2) Minimum lot width of 60 feet is not met; the minimum lot widths range from 30 feet to 40 feet.
- (3) The minimum front yard setback is reduced from 20 feet to 15 feet for all lots.
- (4) The side yard setbacks for all lots will be five feet on one side and zero on the other side; except for lot 65 which will have zero on both sides and lots 27 – 37 and 77 which have five feet on both sides.
- (5) The minimum rear yard setback is reduced from twenty (20) feet to ten (10) feet on all lots except 7 – 10, 13 – 30, 48 – 51, 56 – 59, and 67.

**PUD Perimeter Yard Deviations (Chapter 18.52 DMMC)**

- (1) The required twenty foot perimeter yard area will not be reduced except for lots 8, 52 – 55, and 63 – 66.

Staff's evaluation of the proposal concluded that though the City is limited by the Agreement, the layout of the proposal does not violate the PUD approval criteria established by DMMC § 17.16.130(2) and DMMC § 18.52.010. Again, the City is limited by the terms of the Agreement, however, staff believed that a comparative analysis of the PUD requirements would be helpful to understand the project better. A topic-by-topic evaluation of the proposed PUD subdivision's compliance with the criteria and requested deviations is provided below:

**(1) COMPREHENSIVE PLAN CONSISTENCY**

As required by DMMC § 17.16.130(2)(a) and the Growth Management Act, all development must be consistent with the contents of the City of Des Moines Comprehensive Plan (the Plan). This document provides policy guidance regarding land use and related matters for the City of Des Moines. The Plan includes policies and strategies to achieve the goals established by each element of the Plan. The contents of the Plan should guide the decisions of elected officials, appointed officials, City staff, property owners, and consultants.

Staff's evaluation of the proposal against the Plan concluded that the proposal is consistent with elements of the Land Use Element; the Transportation Element; the Conservation Element; the Capital Facilities, Utilities, and Public Services Element; Parks, Recreation, Open Space Element, and Housing Element. Specific goals achieved by the proposed project are provided in Attachment 10. Selected policies and strategies established by the Plan to achieve the goals of each element are included as Attachment 11. Below is a brief synopsis of specific policies, strategies, and goals related to the proposal:

1. Utilization of the PUD process to achieve the goals and implement the policies established by the Land Use Element of the Plan is provided by Strategy 2-04-09.
2. The proposal is consistent with Goals 4-01-01 and 4-01-07, Policies 4-03-08, 4-03-10, 4-03-18, and 4-03-23, and Strategies 4-04-01 and 4-04-02 in the Conservation Element of



the Plan. Specifically, the proposal attempts to balance economic development and environmental protection as required by Policy 4-03-06 and Strategy 4-04-02. This proposal balances preservation of a wetland against total project density; therefore, the proposal is consistent with City policies.

3. Requiring the applicant to pay school impact fees to the Federal Way School District based on the methodology established by the School District's impact fee program will ensure that appropriate provisions are made for schools consistent with Goal 5-01-01 of the Capital Facilities, Utilities, and Public Services Element of the Plan.
4. Policy guidance provided in the Parks, Recreation, and Open Space Element directs the City to only accept parks with a minimum area of a half acre (Goal 6-01-07, Policies, 6-03-01, 6-03-06, and Strategy 6-04-01(5)). Since the required park dedication is less than one half acre, the development will pay the park in-lieu fee amount established by item 17 of Exhibit C of the Agreement. The park in-lieu fee is also consistent with Strategy 2-04-14 of the Land Use Element of the Plan.
5. Development of the trail in the wetland buffer to increase awareness and utilization of the passive open space is supported by Policy 6-03-01 of the Parks, Recreation, and Open Space Element of the Plan.
6. The Housing Element specifically lists the utilization of PUD developments as a specific strategy (7-04-16) to achieve the goals and implement the policies established by the element which includes providing housing choices to different economic groups within the City of Des Moines.

## (2) ZONING CODE COMPLIANCE

DMMC § 17.16.130(2)(a) requires that the proposed PUD subdivision comply with the underlying zoning dimensional requirements established by DMMC § 18.08. However, in order to permit flexibility, the dimensional requirements established by DMMC § 18.08 can be modified as part of a PUD pursuant to DMMC § 18.52.100. As previously mentioned, the PUD contains deviations to the lot area, lot width, and yard setback requirements established by DMMC § 18.08.030 – DMMC § 18.08.75.

Within a PUD subdivision lots can be platted with less than a 60 foot width and 7,200 square foot lot size as long as the total number of units within the PUD subdivision does not exceed the total number of units calculated by dividing the net development area by the minimum lot size required by the underlying zone. The net development area is determined by subtracting the area set aside for churches, schools, or commercial use from the total development pursuant to DMMC § 18.52.100(5). Based on the formula provided in DMMC § 18.52.100(5), the proposed PUD does not exceed the maximum number of units allowed:



that have less than 20 feet have sufficient area to install the required minimum 12 foot wide driveway approach. Given the design of the plat, all lots with the reduced frontage will have shared driveway approaches so the maximum driveway width on a site is 12 feet and then flares out to a more standard driveway width. Therefore, it is staff's conclusion that the reduced street frontage width does not create an unsafe situation and does not prevent reasonable use of the lot.

#### Corner Lots

All corner lots within the subdivision are required to have a width five feet wider than the width required by the underlying RS-7,200 zone classification; however, DMMC 18.52.100 authorizes a reduction in the minimum lot width. The minimum lot width within the PUD is reduced. The proposed layout has been reviewed by the City's Transportation Engineer and there is not a site distance concerns as a result of the reduction.

#### Odd Lots

Setbacks for all lots are illustrated on the preliminary PUD subdivision plans.

### (4) PUBLIC INFRASTRUCTURE

DMMC § 17.36.020(4) and DMMC § 17.36.020(5) require that the proposed subdivision is in the public interest and includes adequate provisions for open spaces, drainage ways, rights-of-way, and planning features that assure safe walking conditions for pedestrians, schools and parks/playgrounds. Below is a summary of the proposal's provisions for open spaces, drainage, rights-of-way, pedestrian amenities, schools, and parks:

#### **Right-of-Way (ROW) Improvements**

##### Traffic Study

The City's Transportation Engineer has reviewed the traffic study submitted for the above referenced project. This report was prepared by David Hamlin & Associates in May of 1998 (Attachment 12a). Since the traffic study was prepared, several changes to the adjacent transportation network have occurred. Per the terms of the Agreement, the applicant can not be required to produce any new documents or reports to analyze potential impacts. Therefore, the City of Des Moines hired Mirai Associates, Inc. to provide an update to the previous traffic study. That study was completed in November of 2007 (Attachment 12b). The City's Transportation Engineer concurred with the findings in the updated traffic study.

### **Conditions**

- Traffic impact fees will be required for the future building permits for the units within the proposed development to mitigate for transportation-related impacts in the area. Traffic impact fees are based on the number of new PM peak hour trips generated by the development as outlined in Section 12.56 of the Des Moines Municipal Code (DMMC). Traffic impact fees will be collected when building permits are issued. The limitation on impact fees provided in the Agreement only applies to the approval of the PUD and not to future building permits.
- The applicant shall be required to provide the mitigation outlined in the Settlement Agreement.
- Traffic calming within the Redondo Riviera Neighborhood should be a requirement of the development. Traffic calming should be considered along South 279<sup>th</sup> Street, 13<sup>th</sup> Avenue South, and South 276<sup>th</sup> Street. This requirement would likely need to be funded by the City of Des Moines.

### **Preliminary Plat Plans**

The City's Transportation Engineer reviewed and commented on the preliminary plat plans. Previous comments have been addressed to the Transportation Engineer's satisfaction, given the provisions of the Agreement.

The layout of the internal roadways appears to be consistent with the City's Street Development Standards and is consistent with the terms of the Agreement.

All of the internal roadways are classified as local streets except for 15<sup>th</sup> Avenue South which is classified as a neighborhood collector. Therefore, a landscape strip is not required per the Street Standards. If the landscape strip is incorporated into the final design (as indicated), provisions for a private maintenance agreement from the home owners association will be required. Any landscape strip that is less than 4 feet in width may not contain street trees.

### **Conditions**

- Minimum Design Requirements:  
The internal roadways shall be designed and constructed consistent with the Des Moines Street Development Standards, the American Association of State Highway and Transportation Officials (AASHTO), and the Manual on Uniform Traffic Control Devices (MUTCD), except as indicated above. The internal public roadways shall have a 25 M.P.H. design speed. Any internal private roadways shall have a 20 M.P.H. design speed.



## **Drainage**

Surface Water Management staff has reviewed the preliminary plat plans and the Preliminary Technical Information Report (TIR) prepared by Peterson Consulting Engineers dated November 2006 and revised March 2007 and June 2007 (Attachment 12c). Per the Agreement, the 1998 King County Surface Water Design Manual shall apply to the project. Based on the review of the plans, specifications and technical reports, staff has determined that the below described facilities are consistent with the 1998 King County Surface Water Design Manual.

Stormwater from the site is collected and conveyed to a detention/treatment vault that is sized for Level 2 flow control for detention and meets the Basic Water Quality Menu for treatment. The proposed location for the upper storm facility will be located in Tract "B" and flows from the facility will be dispersed prior to discharging at the "natural discharge location" of the site, the location where runoff leaves the site under existing site conditions, as defined by the King County Manual.

Offsite upland flows from Pacific Highway South are collected from two discharge locations and conveyed to the wetland located in Tract A. In addition to the offsite flows, to maintain the hydroperiod of the expanded wetland, onsite rooftop (non-pollution generating) runoff of lots 1-49 will be discharged directly to the wetland. A preliminary runoff duration analysis was performed studying flows contributing to the wetland (both offsite and on-site) to determine the equivalent roof top area needed for the wetland.

Conveyance pipes will be located to disturb the buffer of the wetland as little as possible. An overflow structure for the wetland is provided and overflow from the wetland is conveyed through a drainage easement between lots 37 and 38 and discharged to the natural discharge location within Tract B.

The preliminary plat indicates that the detention/treatment vault will be placed within a tract which will be deeded to the City upon recordation of the plat in accordance with DMMC 17.36.100(2). Staff has determined that the above description of the detention/treatment vault is consistent with the City's surface water design manual (the 1998 King County Surface Water Design Manual).

## **Schools**

The proposed Pacific Heights PUD subdivision is located in the Federal Way School District, which has instituted an impact fee program. The impact fee program is to ensure that adequate public school facilities and improvements are available to serve new development and that new development pays a proportionate share of the cost for public facilities needed to serve the new development. Based upon the "Housing Generation Factor" established by the Federal Way School District, approximately 12 elementary students, 6 junior high students, and 8 high school students will reside within the project site. Under the impact fee program, separate fees will be calculated



for single family and multifamily units: multifamily is defined as all attached dwelling units and single family is defined as all detached dwelling units. The program establishes a per unit impact fee of \$856 for multifamily units and a per unit fee of \$3018 for a single family unit. As stated in item 11 of Exhibit C of the Agreement, the applicant is required to pay \$96,180 in school impact fees.

| UNIT TYPE      | NUMBER    | COST PER UNIT | TOTAL           |
|----------------|-----------|---------------|-----------------|
| Detached       | 14        | \$3,018       | \$42,252        |
| Attached       | 63        | \$856         | \$53,928        |
| <b>Totals:</b> | <b>77</b> | <b>-</b>      | <b>\$96,180</b> |

### Parks

DMMC § 17.36.150 requires that the applicant requesting a subdivision develop, dedicate, and improve space for use as a public park or provide a payment in lieu of this dedication. DMMC § 17.36.150 requires that the proposal maintain the current ratio of park land to population within the City in order to provide for the recreational needs of the future residents of the proposed subdivision.

Based upon the Population Local Review Worksheet for the City of Des Moines provided by the Office of Financial Management, approximately 208 people will reside within the proposed subdivision. Based on the level of service standard established by Chapter 6 of the Plan an additional 76,960 square feet of park would need to be dedicated to the City. However, the City currently provides approximately 186 square feet of combined park land per individual. Therefore, to meet the requirements of DMMC § 17.36.150 the applicant is required to dedicate a minimum of 38,688 square feet. The table below provides a breakdown of the different areas within the proposed subdivision:

| NAME                        | AREA               | PERCENTAGE  |
|-----------------------------|--------------------|-------------|
| Roads                       | 2.43 Acres         | 19%         |
| Storm Water/Park Facilities | 0.30 Acres         | 2%          |
| Wetlands                    | 3.23 Acres         | 25%         |
| Private Open Space Tracts   | 0.16 Acres         | 1%          |
| Residential Lots            | 6.68 Acres         | 52%         |
| Private Access Tracts       | 0.13 Acres         | 1%          |
| <b>TOTAL:</b>               | <b>12.93 Acres</b> | <b>100%</b> |

Since the area that that would have been required to be dedicated as a park would have been more than a half acre, the Parks Director and the Planning, Building, and Public Works Director would typically have required the applicant to dedicate and

improve space for use as a public park in accordance with DMMC § 17.36.150(3). However, as stated in items 16 and 17 of Exhibit C of the Agreement, the City agreed to allow the applicant pay a park in-lieu fee in the amount \$35,000 and provide a trail around the wetland to satisfy the City's park requirements.

#### (5) COORDINATED DEVELOPMENT

##### **City of Des Moines**

The proposed preliminary PUD subdivision must provide for coordinated development with adjoining properties or future development of adjoining properties including but not limited to provisions for improved or shared access where appropriate in accordance with DMMC § 17.16.020(6). In order to improve vehicular circulation 15<sup>th</sup> Avenue South is extend from the current terminus in the Applewood subdivision to South 297<sup>th</sup> Street. Additionally, the new South 282 Street is stubbed out to provide a future connection for the property to the west if it is subdivided in the future.

##### **City of Federal Way**

Copies of the site plan were provided to the City of Federal Way during the review of the preliminary PUD since the proposed project is also within the City of Federal Way jurisdictional boundaries east of proposed 15<sup>th</sup> Avenue South. The City of Federal Way is also a party to the Agreement. The recommended changes to the Agreement were reviewed and approved by the City of Federal Way.

#### (6) PUD PERIMETER YARD REQUIREMENTS

DMMC 18.52.100(2) requires that the front yard requirements established by the underlying zone shall apply to all perimeter lines of the proposed PUD. The front yard is 20' for areas zoned RS-7200 and RM-1800 pursuant to DMMC § 18.08.060 and Federal Way Municipal Code Section 22-664 and 22-665. The perimeter line is a lot line constituting the boundary of a PUD as defined by DMMC 18.04.395(2). Therefore, a 20' front yard or buffer would typically be required around the boundary of the entire PUD unless the City Council modifies the requirement pursuant to DMMC 18.52.100(2). The required twenty foot perimeter buffer/yard area will not be reduced except for lots 8, 52 – 55, and 63 – 66.

#### (7) ENVIRONMENTALLY CRITICAL AREAS

##### **WETLANDS**

A wetland delineation report was prepared by Wetland Resources, Inc. dated July 29, 1997, which established the existence of two wetlands on the project site (Attachment 12e). The delineation methodology was consistent with the *Corps of Engineers Wetlands Delineation Manual* (1987 Edition). This delineation methodology utilized a



combination of field indicators to determine the presence of the wetlands including vegetation, soils, and hydrology. Based on this methodology, two wetlands were located on the project site and identified as Wetlands A and B.

Recently the City adopted Ordinance 1400 which repealed the City's previous Environmental Critical Area Regulations and adopted new regulations. This project was submitted prior to the new regulations in April 2007; therefore, the project would be vested under the development regulations in effect at that time. The evaluation of each wetland provided below is based on the proposal's compliance with the City's Environmentally Critical Area Regulations in effect prior to April of 2007.

#### *Wetland A*

Wetland A contains a total of approximately 60,000 square feet and is considered palustrine, unconsolidated bottom, mud, permanently flooded, excavated. Vegetation within the wetlands is dominated by willows, salmonberry, yellow iris, lady fern, and speedwell. According to DMMC § 18.04.663, these wetlands are considered "Significant" wetland since the wetland is greater than one acre in size and has two vegetation classes. Pursuant to DMMC § 18.86.070, "Significant" wetlands require a 100 foot buffer measured from the wetland edge.

In accordance with the terms of the Agreement, the applicant is only required to maintain a 70 foot buffer. The buffer requirement was a compromise between the King County standard at the time which categorized the wetland as a Class 2 wetland requiring 50 buffer pursuant to King County Code 21A.24 (March 1996). Reduction of the buffer is authorized by DMMC 18.86.094(3). The wetland and corresponding 70 foot buffer are within an environmentally sensitive area tract as required by DMMC § 17.36.160 and DMMC § 18.86.110. However, in accordance with item 16 of Exhibit C 16 of the Agreement, the applicant has shown a trail system through the buffer in order to meet the City's recreational requirements. Development of a trail within the buffer of a wetland is authorized pursuant to DMMC § 18.86.100.

#### *Wetland B*

Wetland B is a 5,550 square feet palustrine, scrub-shrub, broad-leaved deciduous, saturated wetland. Vegetation within Wetland B is dominated by salmonberry, sedges, and skunk cabbage. According to DMMC § 18.04.663, Wetland B is considered an "Important" wetland since is less than one acre and has two vegetative classes. Pursuant to DMMC § 18.86.070, "Important" wetlands require a 35 foot buffer measured from the wetland edge.

In accordance with the terms of the Agreement, the applicant is authorized to fill this wetland. The City has the authority to grant the filling of wetland pursuant to DMMC § 18.86.094(3) which authorizes filling of a wetland to have reasonable use of the property.



There is also some evidence that past development activity has altered the natural hydrology of the wetland.

#### Wetland Mitigation

The applicant will be mitigating for the wetland fill by creating 7,578 square feet of wetland adjacent to Wetland A. The applicant's project has a 1:1.36 replacement ratio, which exceeds the City required 1:1 ratio. In addition, the 70 foot buffer around the existing wetland will be cleared of all invasive non-native plants and enhanced with native trees and shrub plantings.

The conceptual mitigation plan will result in "no net loss" of wetland function and value consistent with the intent of the City's Environmentally Critical Area Regulations. In addition, the conceptual mitigation plan attempts to increase the function and value of the wetland by restoring and enhancing degrading functions and provide a buffer of a sufficient width to protect the environmental feature.

#### **Alternatives:**

The City Council the following options in issuing a decision on this proposal:

- (1) The City Council may approve the proposed preliminary PUD subdivision with the recommended changes to the Illustrative Plan contained in the Agreement.
- (2) The City Council may approve the proposed preliminary PUD subdivision without changes to the Illustrative Plan contained in the Agreement.
- (3) The City Council may direct staff to negotiate with the applicant and the City of Federal Way to make additional changes and bring the changes back for future Council consideration. Any changes to the plan must be agreed to by the applicant and the cities of Des Moines and Federal Way.

#### **Financial Impact:**

The modified subdivision would result in the development of 77 new single family homes which will provide additional recurring property tax revenue to the City of Des Moines and the City of Federal Way. Collection of the property tax revenue will contribute to maintaining an adequate residential tax base consistent with Goal 8-01-01(2) of the Plan. Additionally, the City would receive tax monies on the construction materials for both the homes and the required civil improvements. The City will also receive traffic impact fees at the time of issuance of the building permits for the single family residences. Property taxes and fees collected are expected to offset City expenditures related to typical residential services and uses.

**Recommendation/Conclusion:**

After an exhaustive evaluation of plans, environmental reports, and specifications, staff believes that the proposal is substantially consistent the terms of the Agreement and the modifications would bring the proposal into greater compliance with the City's subdivision and zoning requirements under a PUD. Staff recommends that the City Council approve the proposal. Sub-Section 4F of the Agreement limits the City from imposing additional conditions of approval other than those established in Exhibit C of the Agreement; therefore, no additional conditions of approval are recommended by staff.

**Concurrence:**

South King Fire and Rescue has reviewed the proposed PUD subdivision and determined the preliminary layout is acceptable

The City of Federal Way has reviewed the proposed PUD subdivision and has approved the changes to the Illustrative Plan.



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**SETTLEMENT AGREEMENT, WAIVER AND RELEASE**  
By And Between Granville Southern Corporation, Donald & Marie Tavis, And The Cities Of  
Des Moines And Federal Way

WHEREAS, the City of Des Moines ("Des Moines") is a municipal corporation organized under the laws of the State of Washington and has authority to enact laws and enter into agreements to promote the health, safety, and welfare of its citizens, and thereby control the use and development of property within its jurisdiction;

WHEREAS, the City of Federal Way ("Federal Way") is a municipal corporation organized under the laws of the State of Washington and has authority to enact laws and enter into agreements to promote the health, safety, and welfare of its citizens, and thereby control the use and development of property within its jurisdiction;

WHEREAS, Granville Southern Corporation ("Granville Southern") and the marital Community of Donald and Marie Tavis ("Tavis") (Granville Southern and Tavis shall hereafter collectively be referred to as "Granville") (Note: The term "Granville" expressly includes "Coastal Pacific Development, Inc.," the name of the applicant reflected in some King County files associated with the above-referenced application) have filed an application with King County under King County Permit Application 807C0270 for approval of a development project on real property ("Granville Property") known as Pacific Place. King County's code, regulations, and land use controls, therefore, apply to said project. Tavis owns the Granville Property which is legally described in Exhibit A attached hereto. Granville Southern is under contract to purchase the Granville Property from Donald and Marie Tavis;

WHEREAS, King County's code, regulations, and land use controls applicable to the Granville Property development project known as Pacific Place filed with King County under King County Permit Application 807C0270 would allow for more lots/units, less open space, and other development than would be currently allowed under Des Moines' code, regulations, and land use controls;

WHEREAS, on or August 13, 1998, the BRB issued a decision approving the annexation of property known as the Redondo Riviera Annexation Area, File No. 2016, which included a portion of the subject real property into the City of Des Moines;

WHEREAS, Granville filed an appeal of the BRB's annexation decision with the King County Superior Court under Cause No. 98-2-19694-7KNT. Subsequently, the court conducted a hearing and rendered a written decision and judgment;

WHEREAS, an appeal and cross-appeal were filed from said King County Superior Court's decision in the Washington State Court of Appeals, Division I, under Cause No. 44528-6-1;

WHEREAS, the parties wish to settle the litigation, development issues, and the underlying dispute, including, but not limited to, compromise of the applicable code, regulations, and land use

Initials  
[Signature Box]



controls applicable to the Granville Property development project known as Pacific Place filed with King County under King County Permit Application 807C0270, in a mutually satisfactory manner;

WHEREAS, this Settlement Agreement, Waiver and Release (hereafter "Agreement") is entered into by and between Granville, Des Moines and Federal Way (collectively referenced as "Parties") to resolve legal matters arising out of lawsuits known as Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al., King County Superior Court Cause No. 98-2-19694-7 KNT, and Granville Southern Corp. et al. v. The City of Federal Way, et al., Court of Appeals Case No. 44528-6-1, and to foreclose further claims, damages, requests for injunctive relief or disputes among the parties related to said matters.

NOW THEREFORE, in consideration of the mutual promises set forth herein, the parties agree as follows:

1. Granville, on its own behalf, its heirs, agents, business partners, investors, optionees/optionors, executors, administrators and assigns, does hereby release: each and every one of the Parties, their successors and assigns, officers, officials, employees, agents and attorneys, both individually and in their representative capacities, from any and all claims, appeals or disputes between Granville and the Parties, either jointly or severally, that have been or could have been raised in Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al., King County Superior Court Cause No. 98-2-19694-7 KNT, or any appeals related thereto, from any claims for damages arising out of or related to the City of Des Moines' Redondo Riviera annexation, and from the actions of any party in litigating the above-referenced cases or in entering into this Agreement. Provided, however, it is expressly understood and agreed that this paragraph shall in no way bar any party from filing a claim, demand, or lawsuit for specific performance of the terms and conditions of this Agreement or for damages arising out of breach of the terms and conditions of this Agreement.
2. Granville warrants and affirms that it has not sold, transferred, or otherwise assigned all or any of its interests in any of its appeals, claims, requests for relief or causes of action released herein and that it is solely empowered to waive and release said matters. In support of this representation and in support of this Agreement, Granville agrees to indemnify and hold harmless any and all of the Parties and any persons or entities covered by this Agreement and any affiliated person, company or entity for any damages, costs, attorneys' fees or other expenses in defending any action brought by Granville, or anyone claiming to hold an interest from Granville based on the appeals, claims or causes of action encompassed by this Agreement.
3. As consideration for this Agreement, and upon the approval and execution of this Agreement by the Parties, Granville agrees to dismiss with prejudice its cross-appeal now pending before the Washington Court of Appeals entitled Granville Southern Corp. et al. v. The City of Federal Way, et al., Court of Appeals for the State of Washington, No. 44528-6-1, execute a stipulation providing for vacation of the Final Judgment previously entered by the Honorable Dean Lum in Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al., King County Superior Court Cause No. 98-2-19694-7 KNT, and dismiss with

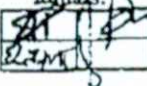
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prejudice its appeal in Cause No. 98-2-19694-7 KNT. Granville, however, shall not be required to withdraw any applications for land use development on the Granville Property that are now pending and vested with King County, including, but, not limited to, the application filed under King County Permit Application 807C0270. Granville, however, agrees that upon annexation of a portion of the Granville Property to Des Moines, as set forth herein, that King County Permit Application 807C0270 shall be transferred to Des Moines for processing subject to the terms and conditions of this Agreement. It is expressly understood that subsequent building and other permits sought for units to be constructed on the subject property following annexation of a portion of the Granville Property into the City of Des Moines shall be processed under the land use and building codes of the City of Des Moines, subject to the terms and conditions of this Agreement

4. As consideration for the mutual promises set forth herein, the Parties collectively agree as follows:

- A. The Parties shall jointly seek relief, modification, satisfaction, or vacation of that judgment filed in King County Superior Court under Cause No. 98-2-19694-7KNT, on the basis that all issues, claims, and defenses relative to said Judgment have been compromised as reflected in this Agreement. Des Moines shall further proceed to modify, finalize, and obtain all appropriate approvals for the Redondo Riviera Annexation Area, File No. 2016 so that the portion of the Granville Property lying westerly of the eastern boundary of 15<sup>th</sup> Ave. South as depicted in the "Illustrative Site Plan" attached hereto as Exhibit B shall be annexed into Des Moines. The Parties shall fully support the annexation of the said portion of the Granville Property into Des Moines.
- B. Within 15 days of the date of this Agreement, Des Moines and Federal Way will commence the public process for amending their Interlocal Agreement, dated December 16, 1996, relating to their respective Potential Annexation Area Designation. Following completion of the public process, the Des Moines and Federal Way City Councils will consider a proposed amended PAA Interlocal Agreement which sets the PAA boundary between Des Moines and Federal Way at the eastern edge of the right-of-way of 15<sup>th</sup> Avenue South, as depicted on the Illustrative Site Plan attached hereto as Exhibit B.
- C. Prior to the annexation of any portion of the Granville Property to Des Moines or Federal Way, Des Moines and Federal Way shall adopt pre-annexation zoning and other land use controls and regulations in conformance with the "Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C. In case of conflicts between the Illustrative Site Plan and Building Development Agreement and Des Moines', King County's, or Federal Way's zoning, codes, regulations, and land use controls, the

Initials:  
  
S



"Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C shall control.

- D. Upon annexation of said portion of the Granville Property to Des Moines, King County shall transfer to Des Moines the processing of Granville's application for the multi-family development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. Said King County Permit Application 807C0270, shall be deemed modified at the request of King County, Des Moines, and Federal Way to conform with the "Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C. Provided, that said King County Permit Application 807C0270 shall not be withdrawn from King County, shall not be deemed to have been modified at the request of the applicant, and said transfer shall have no impact on the vested status of said King County Permit Application 807C0270.
- E. Upon said transfer, said King County Permit Application 807C0270 shall be processed by Des Moines in conformance with the terms and conditions of this Agreement. It is expressly understood that subsequent building and other permits sought for units to be constructed on the subject property following annexation of a portion of the Granville Property into the City of Des Moines shall be processed under the land use and building codes of the City of Des Moines, subject to the terms and condition herein. By this Agreement, Federal Way consents to the transfer of said application to the City of Des Moines, and the processing of said application and/or subsequent permit applications on the Granville Property by Des Moines, subject to the terms and conditions herein.
- F. Upon annexation of said portion of the Granville Property to Des Moines, Des Moines shall process Granville's application for the development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. Granville shall not be required to submit, file, or produce any additional documentation, reports, or information other than previously provided to the Parties as part of said King County Permit Application 807C0270. It is expressly understood that this limit on additional documentation shall not be construed to apply to any permit application filed after annexation of any portion of the Granville Property into the City of Des Moines, except for any such permit application that is required for approval as a Planned Unit Development or Subdivision of the development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. The Parties agree that the documentation provided to the Parties as part of said King County Permit Application 807C0270 is as follows:

Initials:  

|    |     |
|----|-----|
| AM | DM  |
| QZ | MTN |



- Environmental Site Assessment by Earth Consultants, Inc. dated September 23, 1997
- Road Variance by DBM Consulting Engineers dated February 19, 1998
- Subdivision Guarantee by First American Title Insurance Company Order No. 345322-5
- Wildlife Study by Wetland Resources, Inc. dated March 25, 1998
- Level One Drainage Report by Eastside Consultants, Inc. dated August 25, 1997
- Geotechnical Report by J. Keith Cross, P.E., dated May 31, 1997
- Traffic Report by David Hamlin & Associates and subsequent addendums
- Level Two Downstream Analysis by DBM Consulting Engineers dated June 8, 1998
- Technical Information Report By DBM Consulting Engineers dated October 24, 1997
- Wetland Report by Wetland Resources, Inc. dated July 29, 1997.

Des Moines' review, processing, and approval of said application shall be limited to a determination that said project complies with the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Moreover, Des Moines shall not review, rescind, or otherwise modify approvals previously granted by King County under said King County Permit Application 807C0270. Except as otherwise stated herein, Des Moines shall further approve said project subject only and exclusively, without modification, amendment, or addition, to the terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Des Moines and Federal Way shall not object to, challenge, or otherwise oppose development of the Granville Property in accordance with the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Provided, that Des Moines shall provide Federal Way a minimum of fourteen (14) days within which to review and comment on Des Moines' approval of Granville's Pacific Place project.

- G. The terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein can be amended, modified, or changed upon the express written approval of Granville (its successors or assigns), Des Moines, and Federal Way.

Initials:  




- H. All process, review, and approval of subsequent applications filed relative to the entire Granville Property, including but not limited to, grading, drainage, construction related, and building permits, shall be by Des Moines and subject to the code, regulations, and requirements of Des Moines, except as otherwise set forth in the terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Provided, however, that Federal Way shall be given a two week period following submittal to review and comment on said applications.
- I. The City of Federal Way will dismiss its appeal now pending before the Washington Court of Appeals entitled Granville Southern Corp. et. al. v. The City of Federal Way, et. al. Court of Appeals for the State of Washington, No. 44528-6-1
- J. Each and every of the named Parties agree to prepare, revise, support and/or execute pleadings, notices, and contemporaneous agreements, as well as conduct and/or participate in any public hearings, deemed necessary to effectuate the intent and purposes of this Agreement.
- K. Each and every one of the named Parties agree to support, uphold and defend this Agreement in the event of an appeal, challenge, or lawsuit seeking to set aside, modify, or render void or invalid this Agreement. In the event, that this Agreement is set aside, modified, voided, or invalidated by a court of law, Granville shall be free, in its discretion, to proceed with its application for approval under King County Permit Application 807C0270, as initially filed.
5. Although King County is not a signing party to this Agreement, the County is encouraged to support and take actions consistent herewith.
6. The Parties understand and agree that the consideration the Parties herein agree to undertake, in the form of compliance with the above-referenced conditions, constitutes the Parties' total offer to resolve and settle any and all appeals, claims, damages or disputes among the parties hereto and that it is full, complete and adequate consideration and compensation for each other's acceptance of the terms stated herein and that no Party will receive any other or further consideration under the terms of this Agreement other than that expressly set forth herein.
7. In the event of that failure or inability of the Parties to comply with the terms and conditions of this Agreement, Granville shall be free, in its discretion, to proceed with its application for approval under King County Permit Application 807C0270, as initially filed. In such an event, the City of Federal Way and the City of Des Moines are likewise free to comment upon, object to, oppose, challenge and/or appeal development of the Granville Property under King County Permit Application 807C0270, as initially filed or as subsequently modified.

Initials:  




8. This Agreement may be executed in identical counterparts. For purposes of recording, filing, or providing copies of this Agreement, the counterpart signature pages (and any other pages that are specially marked by the signatories) may be inserted into one of the counterparts to create a single original or copy of the entire agreement.

10. This Agreement shall be interpreted under the laws of the State of Washington.

11. The Parties hereby authorize their attorneys to (1) execute the appropriate notices to effect dismissal(s) with prejudice of any and all appeals or claims the Parties have initiated against any other Party(ies) or any persons covered by this Agreement; and (2) take all necessary and proper steps to ensure that such notices are filed on execution of this Agreement.

12. This Agreement shall be binding upon the heirs, successors and assigns of the parties. Each of the signatories represents and warrants that he or she has the authority to sign for his or her represented entity.

13. **Attorneys' Fees.** Should it be necessary for any party to this Agreement to initiate legal proceedings to adjudicate any issues arising hereunder, the party or parties to such legal proceedings who substantially prevail shall be entitled to reimbursement of their attorneys' fees, costs, expenses and disbursements (including the fees and expenses of expert and fact witnesses) reasonably incurred or made by the substantially prevailing parties in preparing to bring suit, during suit, on appeal, on petition for review, and in enforcing any judgment or award, from the party or parties who do not substantially prevail.

14. **Entire Agreement.** This Agreement is the final and complete expression of the agreement of the parties on all these subjects. This Agreement may not be modified, interpreted, amended, waived or revoked orally, but only by a writing signed by all parties. This Agreement supersedes and replaces all prior agreements, discussions and representations on all these subjects, all of which are merged into, and superseded by, this Agreement. No party is entering into this Agreement in reliance on any oral or written promises, inducements, representations, understandings, interpretations or agreements other than those contained in this Agreement and the Exhibits hereto.

15. The Parties acknowledge that they have had full opportunity to review, confer, and discuss this Agreement with legal counsel and that their respective legal counsel has advised that this Agreement is valid, enforceable, and legal in all respects and that the undersigned individuals have full authority to execute this Agreement on behalf of the respective Parties.

16. **No Admission.** Nothing contained in this Agreement shall constitute an admission of error, wrongdoing, liability, or any other kind, by any of the parties to this Agreement or by any persons or entities released or covered by this Agreement; provided, however, it is expressly understood

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Initialed  
[Signature]



and agreed that this paragraph shall in no way bar any party from filing a claim, demand, or lawsuit for specific performance of the terms and conditions of this Agreement or for damages arising out of breach of the terms and conditions of this Agreement.

DATED this \_\_\_\_ day of \_\_\_\_\_, 2000.

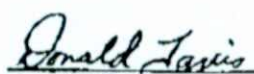
For Granville Southern Corporation:

  
Ken Simpson, Its \_\_\_\_\_

Dated: \_\_\_\_\_

  
Darrell S. Mitsunaga, WSBA 12992  
Reed McClure, Attorneys for Appellants  
Granville Southern Corporation, and  
Donald and Marie Tavis

For Donald and Marie Tavis:

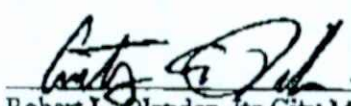
  
Donald Tavis

Dated: 3/28/03

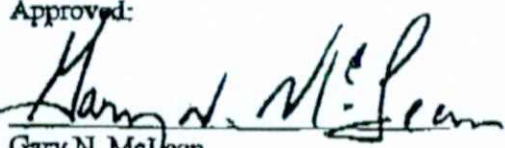
  
Marie Tavis

Dated: 3/28/03

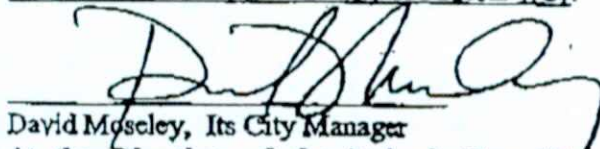
For Defendant/Respondent City of Des Moines:

  
for Robert L. Olander, Its City Manager  
At the Direction of the Des Moines City Council  
at an Open Public Meeting on May 11, 2010,  
Dated: August 18, 2000.

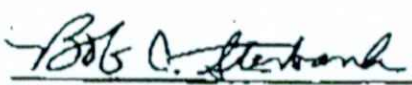
Approved:

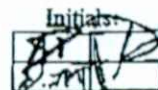
  
Gary N. McLean  
Des Moines City Attorney  
21630 11<sup>th</sup> Avenue South, Suite C  
Des Moines, WA 98198

For Defendant/Respondent City of Federal Way:

  
David Moseley, Its City Manager  
At the Direction of the Federal Way City  
Council at an Open Public Meeting on  
July 18, 2000  
Dated: Aug. 25, 2000

Approved:

  
Bob C. Sterbank, WSBA No. 19514  
Federal Way Interim City Attorney  
33530 First Way South  
Federal Way, WA 98003-5006

Initials:  


RECEIVED  
DEC 24 1977

SETTLEMENT AGREEMENT, WAIVER, AND RELEASE

Granville Southern Corporation, Donald and Marie  
Tavis, and the Cities of Des Moines, and Federal Way

PARCEL A:

THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE  
SOUTHEAST QUARTER OF SECTION 32, TOWNSHIP 22 NORTH, RANGE 4 EAST,  
W.M., IN KING COUNTY, WASHINGTON;

PARCEL B:

THAT PORTION OF THE NORTH 219.70 FEET OF THE NORTHWEST QUARTER  
OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 22 NORTH, RANGE  
4 EAST, W.M., IN KING COUNTY, WASHINGTON, LYING WEST OF STATE  
HIGHWAY.

PARCEL C:

THAT PORTION OF THE SOUTH 219.70 FEET OF THE NORTH 439.40 FEET OF  
THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 33,  
TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY, WASHINGTON,  
LYING WESTERLY OF STATE ROAD NO. 1 (PACIFIC HIGHWAY SOUTH).

PARCEL D:

THE SOUTH 219.74 FEET OF THE NORTH HALF OF THE NORTHWEST QUARTER  
OF THE SOUTHWEST QUARTER LYING WEST OF THE STATE ROAD, SECTION  
33, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY,  
WASHINGTON.

*Handwritten signature/initials: G.M. / BGR / D.J. MT.*







Exhibit C

**ZONING AND BUILDING DEVELOPMENT AGREEMENT FOR DEVELOPMENT OF  
THE GRANVILLE PROPERTY LEGALLY DESCRIBED IN ATTACHED EXHIBIT 1**

- (1) Zoning shall be RA 3600;
- (2) Development shall be processed and approved as a Planned Unit Development or Subdivision pursuant to Des Moines Code consistent with the terms and conditions set forth herein and the Settlement Agreement, Waiver, and Release to which this document is appended as Exhibit C.
- (3) Except as otherwise stated herein, the number of units/lots shall not exceed 84 consisting of a mix of 21 single-family residences, 30 duplexes, and 1 triplex. The mix of single-family residences, duplexes and triplexes shall be subject to minor modification at the request of the Applicant, subject to the approval of Des Moines and Federal Way, as provided in paragraph (17) below. Ownership of each unit/lot shall be in fee simple ownership.
- (4) The number, location, type, configuration, and size of units and lots; size, location and configuration of detention; roadway location, width, and length; buffers; general layout; open space; and all other improvements shall be as depicted in the Illustrative Site Plan, dated March 17, 2000, prepared by Peterson Consulting Engineers under Job Number COPD-0001 and attached as Exhibit B ("Illustrative Site Plan") to the Settlement Agreement, Waiver, and Release to which this document is attached as Exhibit C. Minor deviations from said Illustrated Site Plan may occur subject to the approval of Des Moines and Federal Way, provided that the number of lots, units, and building sites shall remain unchanged, except that the number of lots, units, and building sites may be reduced, at the sole discretion of the applicant. The detention, drainage, and road layout reflected in the Illustrative Site Plan may also be changed, subject to approval by the City of Des Moines and the City of Federal Way. In case of conflicts between the Illustrative Site Plan and Des Moines' or Federal Way's zoning, codes, regulations, and land use controls, this Zoning and Development Agreement and the Illustrative Site Plan shall control.
- (5) The City of Des Moines shall provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on the Illustrative Site Plan prior to the City of Des Moines' approval of the Pacific Place Planned Unit Development. Prior to approval, the City of Des Moines shall also provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on any applications for building permits for individual buildings/lots within that portion of the Granville Property contained within the City of Federal Way PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time of any application for a building permit on any lot located on the east side of 15<sup>th</sup> Avenue South. To implement this paragraph, the City of Des Moines shall provide copies of the Illustrative Site Plan, or building permit application, as applicable.

*J.M.*  
*[Signature]*



to the City of Federal Way, and the 14-day review and comment period shall commence upon Federal Way's receipt of the Plan or application, as applicable.

- (6) The City of Des Moines shall provide to the City of Federal Way 15% of the application fee amount charged to the applicant for any building permit for lots on the Granville Property and located east of 15<sup>th</sup> Avenue South. Payment to Federal Way shall be made within 30 days of Des Moines' receipt of the fee from the applicant.
- (7) 15<sup>th</sup> Ave. S. as depicted in said Illustrative Site Plan shall be dedicated to the City of Des Moines as a public street;
- (8) Development applications that are consistent with the terms of this development agreement shall be deemed to have incorporated design considerations and mitigation measures that are sufficient to avoid probable, significant environmental impacts; accordingly, such application shall be subject to issuance of an MDNS, with no additional conditions other than as set forth herein, and no EIS will be required;
- (9) Previous studies related to wetlands and drainage on the site prepared and submitted to King County under King County Permit Application 807C0270 shall be deemed fully adequate and sufficient and shall be used. No additional studies shall be required. The Parties agree that the documentation provided to the Parties as part of said King County Permit Application 807C0270 is as follows:  
  
Environmental Site Assessment by Earth Consultants, Inc. dated September 23, 1997  
Road Variance by DBM Consulting Engineers dated February 19, 1998  
Subdivision Guarantee by First American Title Insurance Company order no. 345322-5  
Wildlife Study by Wetland Rescues, Inc. dated March 25, 1998  
Level One Drainage Report by Eastside Consultants, Inc. dated August 25, 1997  
Geotechnical Report by J. Keith Cross, P.E., dated May 31, 1997  
Traffic Report by David Hamlin & Associates and subsequent addendums  
Level Two Downstream Analysis by DBM Consulting Engineers dated June 8, 1998  
Technical Information Report By DBM Consulting Engineers dated October 24, 1997  
Wetland Report by Wetland Resources, Inc. dated July 29, 1997.
- (10) The Level 2 Flow Control Standard, as defined in the 1998 King County Surface Water Design Manual, shall apply to detention facilities for the project. No downstream analysis shall be required. The detention facilities for the project shall only need to meet additional drainage demands created by this project. This project shall not be responsible for solving preexisting drainage issues faced by downhill property owners;
- (11) School impact fees (for Federal Way School District) will be collected;
- (12) WSDOT must approve (in writing) any and all entrances and exits proposed to/from Highway 99; provided, however, that Applicant agrees not to seek approval for such entrances and/or exits to or from Highway 99 from the Granville Property;

D.T.M.T.  
R.M.C.



- (13) The market store will be demolished if the property upon which it is located is included within the project;
- (14) The City of Des Moines shall apply, and the applicant and its successors, heirs and assigns shall comply with, the City of Federal Way sign code, Federal Way City Code Sections 22-1596 - 22-1629, or as amended, with respect to that portion of the Granville Property within the City of Federal Way's PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time Granville or its successors, heirs or assigns seek to construct or install any sign.
- (15) The City of Des Moines shall apply, and the applicant shall comply with, the City of Federal Way street development requirements for that portion of Pacific Highway South abutting the Granville Property; provided, however, that the applicant shall not be required to construct street improvements for that portion Pacific Highway South. To mitigate the traffic impacts from the Pacific Place development, however, Granville shall do the following:
- (a) Pay its pro rata share of the cost of the future Transportation Improvement Project ("TIP") known as SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development or Subdivision approval from the City of Des Moines and the expiration of all applicable appeal periods. Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of twenty (20) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>.
  - (b) Pay its pro rata share of the cost of the TIP known as S. 288<sup>th</sup> / SR 99 Intersection Improvements, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development approval from the City of Des Moines and the expiration of all applicable appeal periods. [Note: I added this to clarify timing of payment.] Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of seven (7) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the S. 288<sup>th</sup> / SR 99 Intersection Improvements. *Payment*  
*ABL*
  - (c) As part of the Pacific Place planned unit development, dedicate to the City of Federal Way a 15-foot right-of-way along the east boundary of the Granville Property lying immediately adjacent to and fronting along Pacific Highway South. Provided, that such right-of-way dedication may, at the sole discretion of Granville, contain a reversionary clause, causing the dedicated property, or any portion thereof, to revert back, be re-conveyed, or otherwise transferred to Granville, its heirs, successors, and assigns in the event that the City of Federal Way determines, in its sole discretion, that the dedicated property, or any portion

*J. L. M.**U. N. 1-200*



thereof, is not needed for right-of-way purposes at the time of construction of the SR 99 S. 284<sup>th</sup> - S. 272<sup>nd</sup> TIP.

- (16) In recognition of recreation space dedication requirements customarily imposed by the City of Des Moines, the City of Des Moines expressly agrees that Granville shall be given full credit for the total square footage of the 10-foot wide easement granted for construction of the walkway surrounding the wetland located in the middle of said project and the costs of construction for the sidewalk along said walkway.
- (17) In deference to the recreation space improvement requirements customarily imposed by the City of Des Moines, Granville shall make a one-time payment in the amount of \$47,500.00 to the City of Des Moines. As consideration for Granville's agreement to make the full payment of \$47,500.00, the City of Des Moines agrees to increase the maximum number of units allowed by one, to 85, which the Applicant, in its sole discretion, can apply to create a single-family residence, duplex, or triplex; provided, however, if Granville is unable or chooses not to increase the maximum number of lots in the final plan to 85, it shall only be responsible for making a one-time payment in the amount of \$35,000.00 to the City of Des Moines as its mitigation fee for recreation space improvements. Arrangements for said payment, if applicable, and written confirmation in the form of an amended site plan reflecting Granville's decision regarding the final number of units and their final placement and configuration, shall be made on or before the date on which the Des Moines City Council is scheduled to vote on Granville's proposed Planned Unit Development as described herein. Said payment, however, shall not be due until final approval of the Planned Unit Development or Subdivision as described herein and the expiration of all appeal periods.
- (18) At the time of construction of 15<sup>th</sup> Avenue South, Granville shall install traffic calming devices, in the form of speed humps, on 15<sup>th</sup> Avenue South within the proposed Pacific Place site and within the Applewood subdivision. The number, location and design of the speed humps shall be as determined by the City of Des Moines and City of Federal Way Public Works Directors, and set forth by Granville on the engineering / construction plans for 15<sup>th</sup> Avenue South.
- (19) No mitigation fees or improvements shall be required as a condition of approval of the Planned Unit Development by the City of Des Moines, except as set forth herein; provided, however, that this agreement does not alter or waive Granville's legal obligation to comply with any and all applicable laws regarding impact fees imposed by the Federal Way School District.

D. L. M. T.  
11.11.11





# **City of Des Moines** Orthophoto Map

Des Moines City Limits

Pacific Heights PUD

Proposed Lot Lines

PUD Boundaries

Wetland

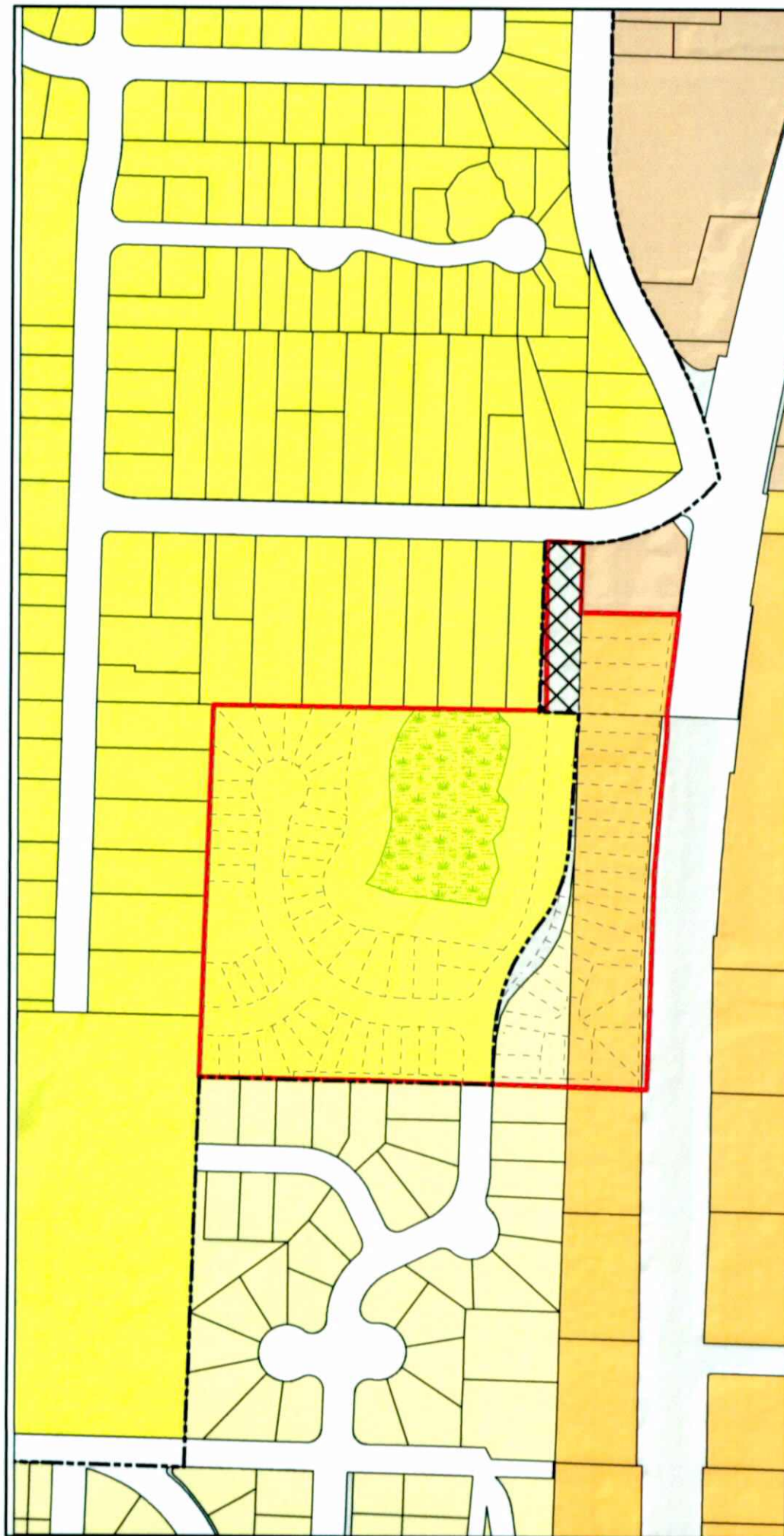


King County  
City of  
Des Moines



21630 11th Ave S  
Des Moines, WA 98198-6398  
Phone: (206) 878-4056 (Fax: (206) 878-7806  
Web: <http://www.desmoineswa.gov>  
The Orthophoto Map and  
Aerial Imagery are the property of the City of Des Moines, WA.





# City of Des Moines

## Zoning Map

### Des Moines City Limits

#### Pacific Heights PUD

Proposed Lot Lines

PUD Boundaries

Wetland

### Zoning

#### Des Moines

##### RESIDENTIAL

RS-7200 - Residential Single Family 7,200

##### Federal Way

##### RESIDENTIAL

RS-7.2 - 1 Unit per 7,200 Sq. Ft.

RM1800 - Residential Multifamily 1,800

RM2400 - Residential Multifamily 2,400

##### COMMERCIAL

BC - Business Community

### King County

Zoning Classification Not Shown on King County Zoning Map



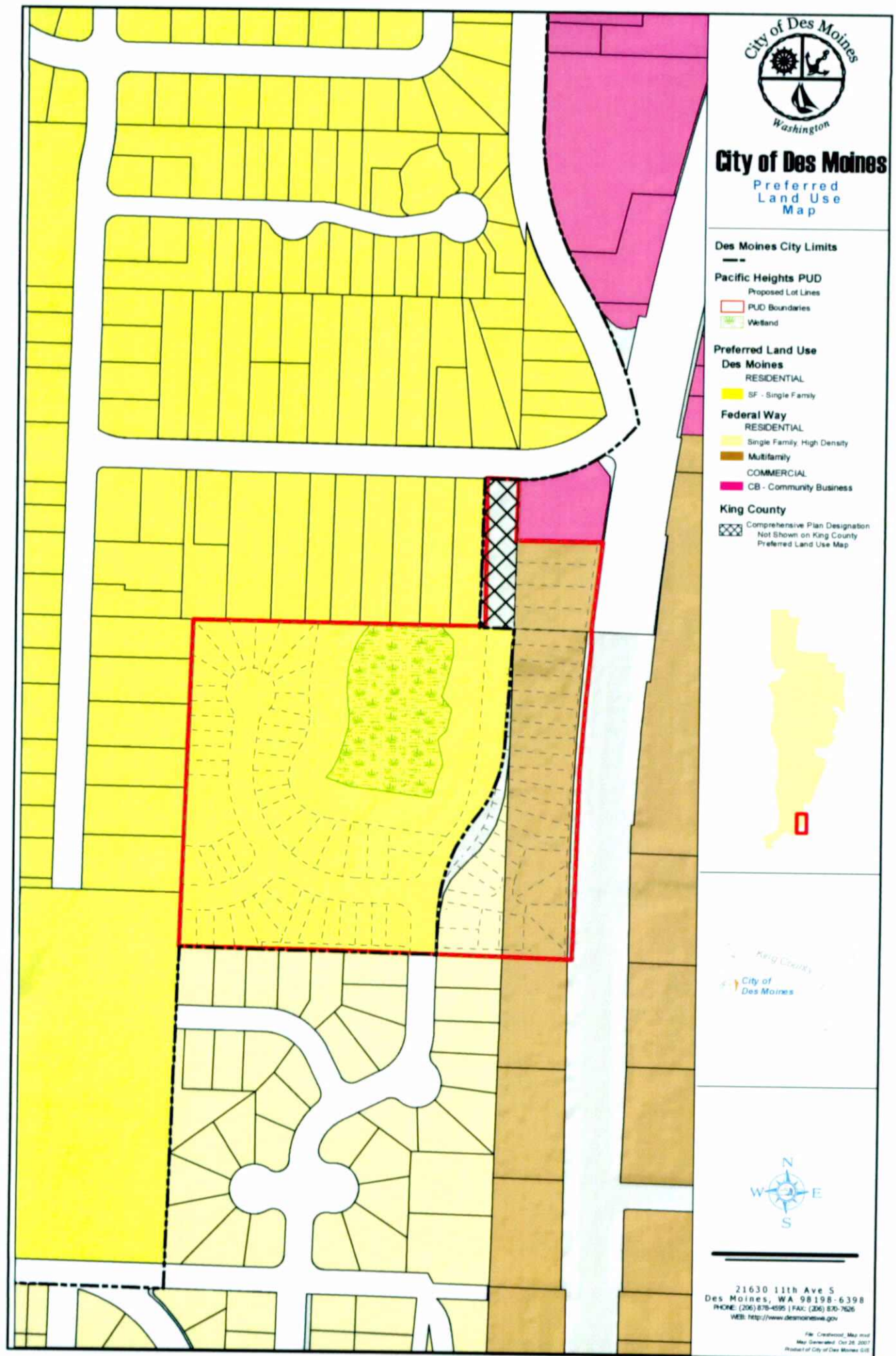
King County  
City of Des Moines



21630 11th Ave S  
Des Moines, WA 98198-6398  
PHONE: (206) 870-4595 / FAX: (206) 870-7626  
WEB: <http://www.desmoineswa.gov>

File: C:\desmoines\Map.mxd  
Map Generated: Oct 28, 2007  
Product of City of Des Moines GIS







- PACIFIC HEIGHTS -

8-27-07

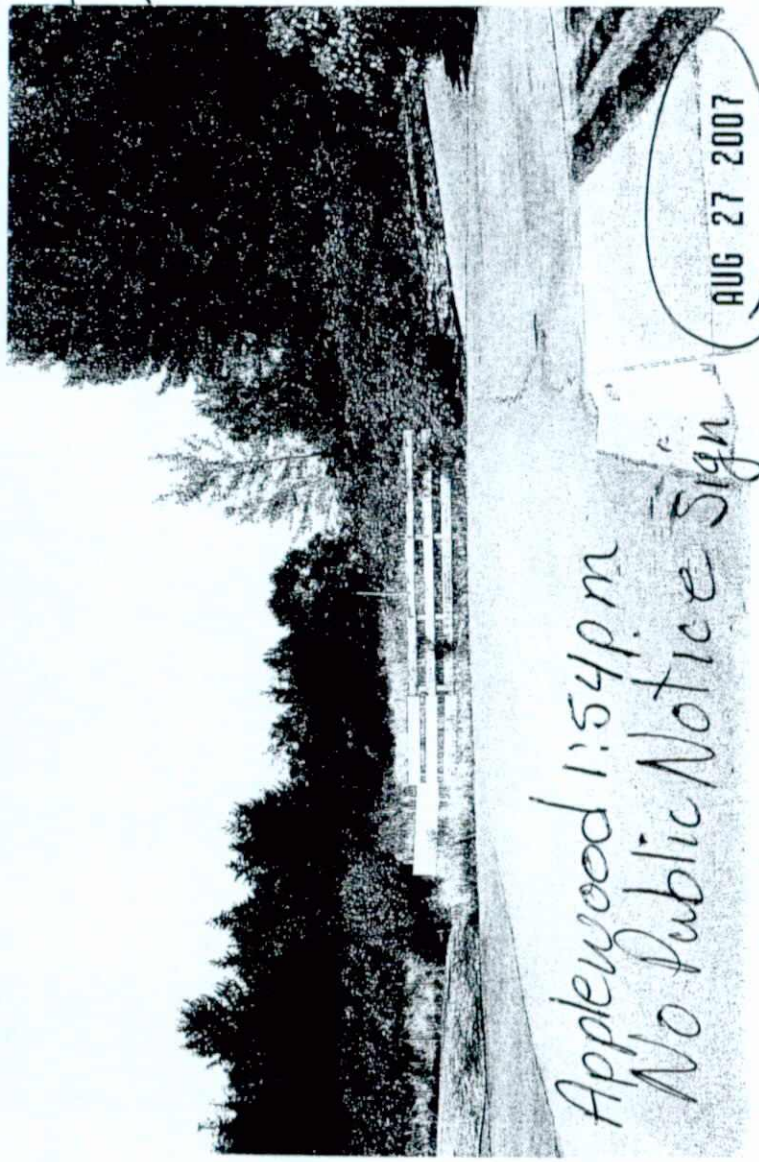
Due to the fact that no Public Notice Signs were posted in a timely/legale time frame on So. 279<sup>th</sup> St and at 15 Av. So, and Pacific Av. So., it is requested that a new public comment due date be set from the date the signs were posted 8-27-07, all 3 in the afternoon - just a few hours before the 4:30 p.m. deadline.

The sign was put up on Pacific just before the sign on 279<sup>th</sup> St. 8-27-07 1:54 p.m.

AUG 27 2007

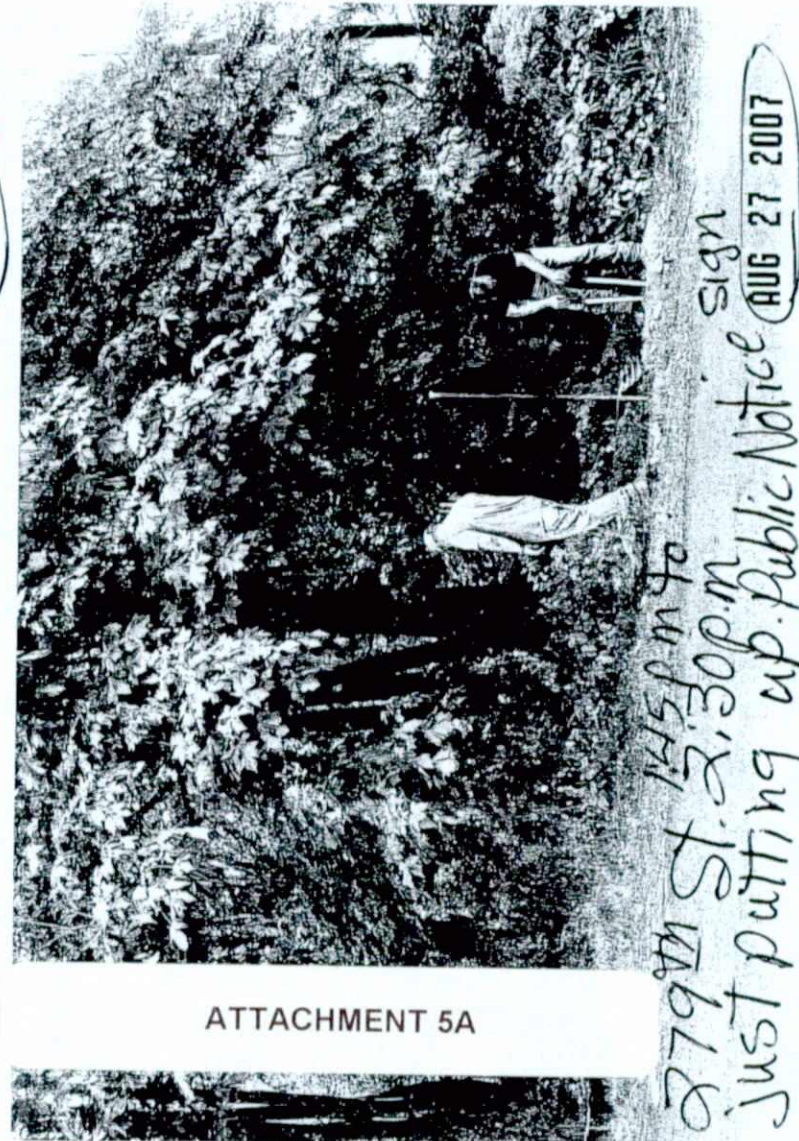
Tr Anderson

Patricia Daniel  
1313 So. 279<sup>th</sup> St.  
Des Moines, Wa. 98198  
253-839-7829.



Appledwood 1:54 p.m.  
No Public Notice Sign

AUG 27 2007



279<sup>th</sup> St. 1:45 p.m. to 2:30 p.m.  
just putting up Public Notice sign

AUG 27 2007



— Pacific Heights — 8-27-07

Included is a report from 12-22-97-  
some of which doesn't apply to the  
current situation - but much of  
it still does - especially in light  
of "The Agreement" from data,  
reports and studies from 96-98 and  
then 2000. Much has changed  
since then and needs new studies  
and reports. Much was mentioned  
that need to still be studied in -  
the report included and still applies  
to the current situation. The resi-  
dents of Applwood, So. 279th St, 13th.  
Ave. So. and Redondo Riviera are  
very concerned about a lot that  
has not been addressed. We all  
hopefully suggest this be done.

Thank you for your  
considerations.

Cops  
Over please

Patricia Daniel  
1313 So. 279th St.  
Des Moines, Wa. 98198





King County  
Building & Land Development Division  
Parks, Planning and Resources Department  
3600 - 136th Place Southeast  
Bellevue, Washington 98006-1400

for your information and hope-  
fully your consideration  
- Pacific Heights - P. Daniele / 8-27-07

Determination of Non-Significance (Mitigated)

Effective Determination Date: January 16, 1990

FILE: C8902613 3193-54 Tavis/ Bennett/Shepard  
Proponent: Gerald Berg/Wm. Sherman & Co., Inc. 641-3939

1150-140th Ave NE  
Bellevue, WA 98005

Proposal Description:

A grading permit for 1500 cu yds of fill on 0.7 ac in the RM1800 (High Density Multiple Dwelling) and RS7200P (Residential Single Family) zone. This is the legalization of an existing fill. There are unmapped wetlands on-site.

Location: 28005 Pacific Hwy S, southwest of Kent.

I have mapping of:  
photo - 5/1/80  
Inventory date 6/10/81

STR: NW/SW 33-22-04

Mitigation under SEPA for this proposal includes:

The fill on this property may not be suitable for structural support. All future development on this site shall require thorough geotechnical review for soil bearing strength and foundation design.

NOTE: Under the authority of KCC 21.54: Wetlands on the site will be conditioned through the grading permit process.

~~The Building and Land Development Division has determined that an environmental impact statement (EIS) is not required under RCW 43.21C, WAC 197-11, and KCC 20.44. This decision was made after review of a completed environmental checklist, other information on file at the Division's office, and mitigation proposed and/or required as part of this project. The proposal or required mitigation is now part of the proposed action. The conditions and/or agreements are deemed necessary to mitigate environmental impacts identified during the environmental review process.~~

~~Any interested party may submit written comments on this proposal. Written comments or appeals must be received in the BALD office before 4:30 pm on January 31, 1990~~

~~Any appeal shall state with specificity the reasons why the determination should be reversed. ALL APPEALS MUST BE ACCOMPANIED BY A NON-REFUNDABLE \$70.00 FILING FEE.~~



*- Pacific Heights - 8-27-07*  
*City of Des Moines*



COMMUNITY DEVELOPMENT  
805 SOUTH 219TH STREET  
DES MOINES, WASHINGTON 98198-6340  
(206) 878-8626 FAX: (206) 870-6544



December 22, 1997

Robert Derrick, Director  
Development & Environmental Services Dept.  
900 Oakesdale Avenue SW  
Renton, WA 98055-1219

RECEIVED BY  
COMMUNITY DEVELOPMENT DEPARTMENT

DEC 24 1997  
Dec. 24, 1997

AUG 27 2007  
T. Anderson

Re: Application No. B97C0270 and E97E0253

Dear Mr. Derrick:

The City of Des Moines has a number of serious concerns regarding this development application for property within the Des Moines Potential Annexation Area (PAA). For the reasons outlined below, Des Moines opposes this development proposed by Granville Southern. In addition to the significant adverse environmental impacts that will result from this development, the project will create serious governance problems for the Cities of Des Moines and Federal Way. Des Moines' concerns include the following:

**Potential Annexation Area**

The development site consists of four parcels as follows:

| Parcel No. | Size (acres) | PAA         | King County Zoning |
|------------|--------------|-------------|--------------------|
| 322049009  | 9.82         | Des Moines  | R6                 |
| 322049052  | 0.77         | Federal Way | R24                |
| 322049044  | 0.72         | Federal Way | R24                |
| 322049045  | 0.70         | Federal Way | R24                |

*12.01 acres*

*along Pacific Hy. So.*

The majority of this development site (9.82 of 12.01 acres or 82 percent) is within the Des Moines PAA and 2.19 acres is within Federal Way's PAA. The PAA boundary between Des Moines and Federal Way was crafted in response to the Countywide Planning Policies for King County, and in response to the concerns of each jurisdiction and residents of the area.

~~In disregard of the PAA agreement between Des Moines and Federal Way, Granville proposes to develop the four parcels as one condominium complex. The project design does not~~



acknowledge that ~~the development will be annexed by two municipalities. In fact, a condominium building, required parking, and other components of the project straddle the PAA boundary.~~ As Granville's development is annexed by both Des Moines and Federal Way, a multitude of governance/public service problems will occur. Granville's development proposal is in stark contrast to the collaborative and cooperative land use planning envisioned by the Countywide Planning Policies.

**The City of Des Moines strongly urges King County to reject the application and require that any development proposal for these four parcels reference and incorporate the PAA boundary between Des Moines and Federal Way.** For example, the PAA boundary should not bisect any structure or design feature (except landscaping not required by code), and should not separate dwellings from their associated parking, landscaping, recreation area, stormwater retention, etc.

### Pending Annexations

Not only is the 9.82-acre parcel (parcel no. 322049009) within Des Moines' PAA, it is also one parcel of an active annexation request to Des Moines known as Redondo Riviera. Presently, 60-percent annexation petitions are being circulated among/by Redondo Riviera property owners. Similarly, the three small parcels (parcel nos. 322049052, 322049044, and 322049045) are part of a proposed annexation to Federal Way. Both of these annexation efforts are active and both could become effective in 1998. Granville's application to King County is clearly an attempt to "beat the clock" in order to vest to King County development standards before these annexations occur. If Granville is successful at vesting to County requirements, Des Moines and Federal Way must share the burden of a large development that in no way reflects our communities' land use regulations. To alleviate this problem, the 9.82-acre parcel should be improved in compliance with Des Moines' standards. Accordingly, **Des Moines urges King County to adopt City of Des Moines development regulations for the 9.82-acre parcel.**

### Des Moines Comprehensive Plan and Zoning

On December 12, 1996, the Des Moines City Council adopted preferred land use designations for the Redondo neighborhood (Figure 2-12, Greater Des Moines Comprehensive Plan). The Granville property is designated Single Family Residential, Six Dwellings Per Acre Maximum" by the Greater Des Moines Comprehensive Plan. On August 7, 1997, the Des Moines City Council adopted pre-annexation zoning for the Redondo Riviera annexation area. The City of Des Moines zoning for the 9.82-acre parcel is RS-7,200 – Single Family Residential. Accordingly, the maximum residential density allowed by Des Moines Comprehensive Plan and Zoning Code is six dwellings per acre, which corresponds to a maximum of 59 single family residences for the 9.82-acre parcel. With application of Des Moines Environmentally Sensitive Areas regulations (chapter 18.86 DMMC), the actual number of units would be far less due to the presence of two large wetlands onsite.

As designed and proposed by Granville, the 9.82 parcel would contain 88 multifamily dwellings where Des Moines' regulations would allow less than 59 single family dwellings. This

*Permit app. states 100 units and a recreation b. u*



discrepancy is significant and severe. Furthermore, Des Moines' Zoning Code does not allow the transfer of density from multifamily to single family properties (as proposed by Granville) without approval of a Planned Unit Development (PUD). The project plans indicate that the non-wetland area of the 9.82-acre parcel constitutes 6.33 acres. When the wetland area is subtracted from the parcel size, the project's density increases to 13.9 dwellings per acre even though King County and Des Moines zoning allows only six dwellings per acre. Any King County approval of the Granville development would be in disregard of the cooperative land use planning envisioned by the Growth Management Act and the Countywide Planning Policies. This discrepancy accentuates the need to utilize Des Moines' development regulations during review and analysis of this condominium complex. **Again, it is imperative that this property be improved in compliance with City of Des Moines regulations.**

6 acres  
6 units per  
36 units

### Public Notice

On October 9, 1997, I wrote to you to request early notice of any development in the Redondo Riviera area (letter attached). Unfortunately, no public notice of any kind for this application was provided to Des Moines by DDES. Please ensure I am added as party of record for this proposal and am notified of all future comment periods, decisions, hearings, etc.

### Density Transfer

I am uncertain what permits/approvals are required by King County for the transfer of residential density from the R24 parcels to the R6 parcel as proposed. In the event the transfer is proposed pursuant to chapter 21A.36 King County Code (KCC), I have the following concerns:

KCC 21A.36.030.C requires that the sending site have zoning consistent with the King County Comprehensive Plan. The sending sites do not satisfy this KCC requirement. The sending sites (parcel nos. 322049052, 322049044, and 322049045) are zoned R24 while the Comprehensive Plan designates the parcels "Community Business". Accordingly, any approval of the requested density transfer credit would conflict with this requirement.

KCC 21A.36.050.D. requires that the portions of the sending site used for transfer be separated from the remaining portions of the sending site pursuant to Title 19 KCC or deed restriction. This requirement is waived when a conservation easement is recorded pursuant to 21A.36.050.E. The application contains no indication of land division, deed restriction, or conservation easement. Accordingly, any approval of the requested density transfer credit would conflict with these requirements. Furthermore, if transfer of density credit is requested by Granville, this application is presently incomplete.

KCC 21A.36.050.F requires that the application include evidence of ownership or full legal control of all sending sites. The application contains no evidence of Granville's ownership or full legal control. Accordingly, any approval of the requested density transfer credit would conflict with this requirement. Furthermore, if transfer of density credit is requested by Granville, this application is presently incomplete.



KCC 21A.36.050.H requires that the property be developed in conformance with the development standards of the most comparable zone. Based upon overall density, it appears either R6 or R8 would be the most comparable zone. Apartments and condominiums are allowed in the R6 and R8 zones only in conjunction with a density incentive. **Therefore, a transfer of density credit alone does not allow multifamily uses in the R6 or R8 zones.**

Regardless of whether a density transfer credit is requested by Granville, please know that the residential density and land use proposed for the 9.82-acre parcel is dramatically different from that allowed by the Greater Des Moines Comprehensive Plan.

### Density Incentive

The project's site plan indicates that a density incentive is utilized to obtain the desired 100 dwelling units. In particular, the site plan references KCC 21A.34.040.F.4.e, which allows a 10-percent density bonus for projects located within ¼ mile of a transit route. **Chapter 21A.34 KCC does not allow for the transfer of density from one site to another as proposed by Granville. The application materials indicate that Granville has not requested a transfer of density credit.** The non-wetland portion of the site is 6.33 acres in size. According to the KCC, the maximum number of dwellings allowed on the 9.82-acre parcel is as follows:  $6.33 \times 6 = 37.98 + 3.8$  (10% density incentive)  $= 41.78$ . KCC 21A.34.050.B.6 requires that the density incentive be calculated separately for each zone when a development site includes more than one zoning classification. **Des Moines opposes the any development application for this property that would allow more than 42 dwellings on the 9.82-acre parcel. Granville's application does not comply with KCC and should be denied without further review.**

### Wetland Impacts

Two large wetlands exist on the 9.82-acre parcel. These wetlands are confirmed by the project application, the *King County Sensitive Areas Wetland Supplement* (1981), and the *Wetlands of King County*, (1983). See Lower Puget Sound Wetland Nos. 5 and 50. The Wetland Delineation Report submitted by Granville indicates that the large wetland (Wetland A) is classified as a Class 2 wetland and the smaller wetland to the west (Wetland B) is a Class 3 wetland. This information conflicts with King County Assessor's data for tax parcel no. 3222049009, which identifies Class 1 and Class 2 wetlands on this property. The wetland study submitted by the applicant provides a brief description of the two wetlands, but contains no analysis of the wetland impacts. Other than providing the required buffer area around each wetland, the development proposal contains no assessment of wetland impacts or appropriate mitigation measures.

Class 1 w/open water  
Class 2 - (stream open channel)

Intensive development of the Granville site <sup>will</sup> may result in significant adverse impacts upon the existing wetlands and their associated hydrologic and biologic functions. For example, extensive clearing of the site will be necessary for the construction of 100 condominium dwellings. Vegetation outside the buffer area that would be cleared currently provides shade and cover for the wetland and wildlife. The wetland report contains no analysis of how wildlife may be impacted by changes to the development site (within or beyond the wetland buffer area). As



proposed, Wetland A would be completely surrounded by buildings, sidewalks, and roads. While any level of development on this property is likely to adversely impact the wetlands, the magnitude of impacts (both initially and long-term) will be proportional to the intensity of development. The 100 condominiums planned for the site will generate impacts long after construction is complete. Over time, wind-blown garbage, errant Frisbees and other debris will be deposited in the wetlands. Children playing in and around the wetlands will degrade the quality of wildlife habitat these natural areas currently provide. Nature trails or paths also degrade environmentally sensitive areas. Dogs and cats residing in the condominiums will stalk the wetland's inhabitants. No analysis or provision is included in the application materials for maintenance and ongoing protection of the wetlands. Would the condominium association be responsible for maintaining the wetland? There is no regulation that precludes the owner from renting rather than selling the 100 multifamily dwellings. Accordingly, there may be no condominium association for this complex. The form of ownership may itself influence the long-term protection and maintenance of the wetlands. Clearly, further study is needed before any approval of this project can occur. **Des Moines urges DDES to require that these potential significant adverse impacts be studied within an EIS.**

See additional comments below under the heading "Soils and Drainage Impacts". **Des Moines urges DDES to issue a determination of significance (DS) so that a thorough examination of the potential significant adverse wetland impacts can be analyzed, disclosed, and mitigated.**

### Soils and Drainage Impacts

The geotechnical report submitted by Granville (J. Keith Cross, P.E., May 31, 1997) indicates that groundwater was encountered near the surface of the site (2.5-12 feet). It is highly likely <sup>there is an open</sup> ~~that groundwater and surface waters (Wetlands A and B) drain to the west to Redondo Creek and Puget Sound.~~ <sup>channel</sup> As outlined in the report, the site's wet surface and subsurface conditions require special care during and after construction. Furthermore, the 192,000 square feet of new impervious surface proposed with this development will alter and disrupt existing drainage conditions on the site. Much of Redondo Creek and its tributaries flow through steeply sloping areas which are highly susceptible to landslides. Massive mudflows have occurred in this area. Alteration of drainage conditions could change the velocity, volume, and turbidity of Redondo Creek.

This area of South King County drains to Puget Sound via the Redondo Creek and ravine. This drainage system includes a 36" culvert with severe capacity constraints. Significant flooding may occur with any increase in surface water flows in the vicinity of this culvert. An EIS should be prepared to analyze how this development proposal will impact surface water flows through this culvert, and how those impacts can be appropriately mitigated. The EIS should include recommendations for strict controls on the release of surface water from this site. At a minimum, Des Moines recommends that surface water detention designs be designed as follows:



| Existing Flow | Design   | With Safety Factor |
|---------------|----------|--------------------|
| ½ 2 year      | 2 year   | +30%               |
| 2 year        | 10 year  | +30%               |
| 10 year       | 100 year | +30%               |

Neither the geotechnical report, wetlands study, nor the drainage report analyze onsite or offsite drainage impacts that may result from the project. The Level I Drainage Report is inadequate for the scale of project proposed given the potential for significant adverse impacts. **Des Moines urges DDES to require preparation of an EIS with detailed drainage analysis equivalent to a Level II or III report.**

The EIS should include provisions for Special Requirement No. 5 from the King County Surface Water Design Manual (special water quality devices) in order to protect onsite and downstream water quality.

As indicated in the geotechnical report, surface waters from Pacific Highway South drain onto the this development site. It is highly likely that the two existing wetlands on the property currently provide a filtering function for these waters destined ultimately for Puget Sound. Also, diversion of these waters may exacerbate flooding and landslide activity to the west. The information provided with the application does not clarify how downstream conditions may be altered as the site is developed. The EIS recommended by Des Moines can provide the necessary analysis, disclosure, and mitigation that addresses runoff from Pacific Highway South.

As stated above, the project may result in significant adverse impacts upon known, classified wetlands. Certainly these wetlands are part of a larger hydrologic system for this area of South King County. Typically, wetlands such as these are linked by near-surface groundwater flows. This development would disrupt that system by isolating individual wetlands such as Wetland A. The impact of completely surrounding the wetland with buildings, sidewalks, and roads has not been addressed by the applicant.

Wetland and drainage issues associated with the project are worthy of careful study. First, one of the two wetlands onsite is larger than one acre in size. Second, the site is part of a critical drainage area for the surrounding area. Third, the site discharges through several environmentally sensitive areas, including: wetlands; steep slopes; a stream; and the waters of Puget Sound. Fourth, the project plans and the Level I Drainage Report do not address how conveyance will occur beyond the site. Further study is essential before any aspect of this project can be approved.

with houses?  
ptc?  
Regarding soils, field notes from the site reconnaissance for the *Wetlands of King County* indicate that the site contained junk cars and garbage. One or more residences or farm buildings may also have occupied the property. It is quite possible that surface or underlying soils in areas not examined by Earth Consultants, Inc. are contaminated with petroleum-based pollutants or other harmful materials. There are two known areas on the site containing concrete, asphalt and



similar fill materials. Even though high levels of contamination were not discovered in the test pits, these fill areas could contain materials which pose potentially significant environmental and health threats. Furthermore, Earth Consultants, Inc.'s site assessment does not evaluate environmental health impacts that may result from the proposed development.

The lack of analysis of how the 100-unit condominium complex will affect the environment onsite and offsite demonstrates the need for further study. Assessments of existing site conditions are inadequate substitutes for meaningful analysis, disclosure, and mitigation of significant adverse environmental impacts that would be generated by new development. **Des Moines urges DDES to require that an environmental impact statement (EIS) be required before any approvals are granted.**

### Traffic Impacts

The Traffic Impact Analysis (David I. Hamlin and Associates, October 1997) describes some of the transportation impacts that will be generated by the Granville development. Some the study's shortcomings are as follows:

The study neglects to consider the impact upon the intersection of Pacific Highway South and South 288<sup>th</sup> Street. As outlined in the report, many of the trips generated by the project will travel through this intersection. Even though this intersection is entirely within the City of Federal Way, analysis of the project's impacts on this intersection should not be ignored. This intersection has one of the highest accident rates of any intersection in the area. The report correctly identifies South 288<sup>th</sup>/16<sup>th</sup> South as a steep, curving road with no shoulder. It is narrow and without sidewalks. Des Moines urges DDES to require additional traffic analysis to assess the project's impacts upon this roadway and intersection.

To further illustrate the ramifications of ignoring South 288<sup>th</sup> Street, DDES should compare the Traffic Impact Analysis' Table 4 (page 11) and Figure 8 (page 22). Only four of 37 trips exiting the site during the a.m. peak are depicted on Figure 8. Likewise, only four of 19 trips exiting the site during the p.m. peak are depicted on Figure 8. The vehicle trips ignored by Figure 8 would travel through Applewood, presumably in route to the intersection of South 288<sup>th</sup> Street and Pacific Highway South.

Future traffic volumes/conditions should be examined for the year 2010 as well as 2002. Limiting assessment of the project's traffic impacts to 2002 obfuscates how this project will contribute to traffic conditions examined in the long-range traffic studies of Des Moines, Federal Way, and King County.

~~The analysis neglects to consider the impacts that will result from motorists exiting the site at Pacific Highway South, and then making a U-turn in order to travel northbound on either Pacific Highway South or 16<sup>th</sup> Avenue South. Authors of the report speculate that all motorists will obediently travel south to South 288<sup>th</sup> Street in order to reach northbound lanes of Pacific Highway South. However, many motorists may attempt to save travel time by instead exiting onto Pacific Highway South and making a U-turn. The traffic report indicates that the most~~



~~common type of accident in the area is rear-end collision. Certainly, the propensity for rear-end collisions and other types of accidents will increase where motorists attempt to make a U-turn on heavily-traveled Pacific Highway South.~~ *Totally impossible in A.M. to go N. P.M. because of S. Traffic.*

David I. Hamlin and Associates conclude that there will be no impact upon the Applewood subdivision to the south. Des Moines disagrees. The project as designed will convert the quiet, local access streets within Applewood (15<sup>th</sup> Avenue South) into a neighborhood collector street that will provide by-pass routes for area motorists. When this project is complete, motorists destined for Redondo Way, Dash Point Road, and points beyond will be able to avoid the congestion on Pacific Highway South by traveling neighborhood streets. Through-traffic motorists may drive at higher rates of speed than motorists who live in the immediate vicinity. Pass-through traffic may adversely impact quality of life and personal safety for residents of the area (including residents of the proposed condominium complex). Neighborhood traffic calming devices should be considered along with other types of mitigation. **Further study is needed to assess the transportation, safety, and socioeconomic impacts of opening 15<sup>th</sup> Avenue South to through traffic.** This analysis should be provided within the EIS recommended by Des Moines.

The traffic report contains no indication of whether the 168 proposed onsite-parking spaces will adequately serve the demand generated by 100 condominiums. The majority of dwellings will be either 2 or 3 bedroom units and each of these units may generate demand for two or more parking spaces. The 40 one-bedroom units may house two adults, each with their own automobile. I expect that the actual demand for parking will exceed the 168 spaces provided, and that "spillover" parking will occur along local streets. **Further analysis of these potential adverse transportation impacts needs to be completed prior to any approval of the proposed development.** This additional analysis can be conducted as part of the EIS recommended by the City of Des Moines.

As explained above, the majority of this development site is within the Des Moines PAA and may be annexed to Des Moines in the near future. In fact, the 9.82-acre parcel may be annexed to Des Moines before this project (if approved) is even constructed. Because the City of Des Moines may be maintaining the public rights-of-way proposed for this project for the entire life of the project, it is important that right-of-way improvements conform to Des Moines standards. **Des Moines urges DDES to require that all right-of-way improvements conform to City of Des Moines Street Development Standards.**

The project plans submitted by Granville do not include transportation system improvements recommended within Granville's traffic report (page 25). Page 20 of the SEPA checklist states in part, "A de-acceleration lane will be provided to the south of the proposed access within the existing right-of-way". This proposal, while potentially worthwhile, is not consistent with the recommendations of the traffic consultant. **Des Moines urges DDES to require all mitigation measures recommended by Granville's traffic consultant.** If insufficient right-of-way presently exists for the necessary right-turn lane along Pacific Highway South, DDES should require dedication of additional right-of-way as is necessary for this important mitigation. Remember that the most common cause of accidents in this area is rear-end collision. A right-



turn lane at the project's entrance will help ensure this project does not exacerbate these types of accidents.

### Adjacent Single Family Residences

The project's proposed clubhouse would be located immediately adjacent to single family residences. While the clubhouse may be sited appropriately for marketing purposes, relocating this recreation feature would reduce potential adverse impacts upon the single-family residences to the south. For example, moving the clubhouse to the vicinity of buildings B-D or N will provide greater separation from nearby residences (and may improve access to the clubhouse from all condominium buildings).

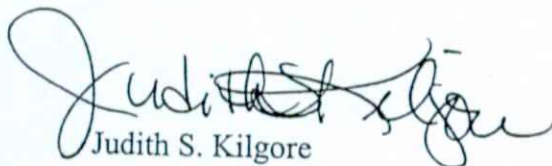
### Summary

This development proposal is inconsistent with King County's development regulations. In particular, density incentive provisions do not allow the transfer of density proposed. No density transfer credit has been requested, and the project fails to satisfy density transfer credit criteria. Accordingly, the project cannot and should not be approved as submitted. Because of these and other deficiencies (as discussed above), the application should not be considered complete.

The analysis of project impacts provided by the applicant is incomplete and does not satisfy SEPA requirements. With the exception of the traffic analysis, none of the studies provided even consider impacts that will be generated by the development. As outlined above, the traffic analysis has numerous shortcomings that collectively and conveniently minimize the project's true traffic impacts. A 100-unit multifamily development crowded around two prominent wetlands on a site with severe access constraints, and bordered on three sides by single family residential communities certainly has the potential to generate significant adverse environmental impacts. A determination of significance (DS) and a thorough environmental impact statement are warranted here. Without a careful examination of the project's impacts and appropriate corrective measures, this area of South King County will be subjected to unmitigated adverse environmental consequences.

Thank you for allowing Des Moines to comment upon this development proposal. I am available to meet with you at your convenience. Please call me at (206) 870-6554 if you have any questions, or to arrange a meeting.

Sincerely,



Judith S. Kilgore

Community Development Director

Applewood Homeowners Association  
28301 15<sup>th</sup> Avenue South  
Federal Way, Washington

October 19, 2007

Pacific Heights Development  
C/o City of Des Moines  
21630 11<sup>th</sup> Avenue South, #D  
Des Moines, Washington 98198

RE: 16<sup>th</sup> Avenue South, going up the hill to Pacific Hwy

At the meeting in Redondo Square it was said that nothing will be done to improve 16<sup>th</sup> Avenue South, if 15<sup>th</sup> Avenue South to South 279<sup>th</sup> Street is opened up for Pacific Heights Development. This will bring many more cars through Applewood which will then turn left and head up 16<sup>th</sup> to Highway 99. 16<sup>th</sup> Avenue South is a narrow road with a hard left hand turn just before 99. 16<sup>th</sup> Avenue South does not even have a sidewalk, although many people, including myself, walk it regularly.

16<sup>th</sup> Avenue South was not designed for heavy traffic. Doing nothing to improve the road, but letting more vehicles travel on it, is just asking for trouble. Your reasons for not improving it are few accidents and not enough money. There are not many accidents now because the road is not heavily traveled. With more traffic there will be more incidences.

I feel it is foolish to push 15<sup>th</sup> Avenue South through without improving 16<sup>th</sup> as well. If you don't have the money to upgrade, then 15<sup>th</sup> Avenue should remain dead ended, just as it is now. If and when 16<sup>th</sup> Ave South is upgraded, then Federal Way can think about making 15<sup>th</sup> Avenue South a through Street.

Sincerely,

*Richard Brannon*

Richard Brannon  
President Applewood HOA



Applewood Homeowners Association  
28301 15<sup>th</sup> Avenue South  
Federal Way, Washington 98003

October 19, 2007

Pacific Heights Development  
C/o City of Des Moines  
21630 11<sup>th</sup> Avenue South, #D  
Des Moines, Washington 98198

RE: Pacific Heights Development and 15<sup>th</sup> Avenue South

One of the issues raised at the meeting in Redondo Square was that a proposed road extension of 15<sup>th</sup> Ave South is to join communities. The thinking is that a person will not have to get on a major arterial to go from one neighborhood to the next. While this argument might have some merit, here are my thoughts on the matter. I have lived in Applewood for 18 years, *basically since its development. If it is so important to have communities joined, then why wasn't 15<sup>th</sup> South put through to South 279<sup>th</sup> Street when our sub division was first developed? Also, South 282<sup>nd</sup> Place dead ends not too far from where 13<sup>th</sup> Ave South dead ends as well. It would have been easy to join the two roads, but this was not done either. My family does a fair amount of shopping at Redondo Square. To get there, however, we must go on a major road. If either of these 2 roads had been joined, getting to places further south would have been much easier.*

Therefore since our Community Planners did not think it necessary to link the neighborhoods for over 18 years, why is it so important to have them joined now? It is my thinking that neither City cares if a road gets built, if either Des Moines or Federal Way has to actually build and pay for it. However now that Pacific West Development has come along, and will make the road, those in charge suddenly want to see it go through. Furthermore the only road proposed to go through is 15<sup>th</sup>. Since there is no developer for the area west of 282<sup>nd</sup> Place, no connection is planned. But if some developer should come along for this parcel, then everyone will suddenly want 282<sup>nd</sup> Place pushed through as well. Why? The builder will construct the road.

In conclusion since neither City bothered with these connections for 18 years, why worry at this point? Kindly let Applewood continue to have their ONE entrance and Pacific Heights can have a separate entrance as well.

Sincerely,



Richard Brannon  
President Applewood HOA



**Dan Lourie**  
**P.O. Box 4021**  
**Kent, WA 98089**  
**(206) 391-8750**

October 23, 2007

To: The City of Des Moines:

Attn: Department of Planning

21630 11<sup>th</sup> Ave S  
Des Moines, WA 98198

This letter is in response to the Pacific Heights Subdivision: Letter of 07-100126-1A

The current configuration of the surrounding roads do not provide access to the below stated parcel numbers which I own. It is my intention, to improve this land.  
The parcel numbers are:

332204-8120-07  
332204-9062-07  
332204-9040-04

Thank you for your consideration.

Sincerely,



Dan Lourie

cc: Federal Way Planning

Please put me on  
mailing list.

Thank You



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Nan O'Nighting

Address 28728 14 Ave So  
Federal Way WA 98003

Phone 253-941-1196

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

Concerns - 288 & Pac Hwy -  
traffic light timing & additional right  
lane at top



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name DON CAMPBELL

Address 27813-13<sup>TH</sup> AVE. S.  
DES MOINES, WA 98198

Phone Home 253-839-3496  
Office 253-288-7021

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

It's very sad when public officials "do their job" but they forget to involve the constituents they work for in the preliminaries that should affect-direct their work. Someone has jumped ahead to speed bump, traffic circles and other "choices". I don't see where the bigger citizen ~~select~~ choices have been considered. Those bigger choices are much more important than speed bump and traffic circle choices.





## PACIFIC HEIGHTS

8/16/2007

*Send me all  
notices and  
meeting  
notifications.*

Please give us a record of your attendance:

Name JANICE P. SINGER

Address 28306 15TH AVE. SO.

FEDERAL WAY, WA. 98003

Phone 253-946-6157

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

Connecting 15th Ave. from Applewood to 279th,  
will create a thoroughfare for all traffic on  
Pacific Hwy. to use, to cut-off driving in heavy  
traffic that they can avoid on Pacific Hwy.  
Anybody, not only people who live there.  
Dead-end it at end of Applewood and Beginning  
of new subdivision then there would be no problem.

*People who live in*  
New subdivision comes in at 279th entrance.  
Applewood continues to come in at 288th hill and  
15th ave entrance. If Both Subdivisions Dead-End  
at that point there will be no traffic problem.  
Do not want all kinds of strange people coming through our subdivision.



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Joe & Cheryl Williams

Address 27901- 13th Ave So  
Des Moines, WA 98198

Phone (253) 941-5143 or (253) 205-5448  
home cell

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

~~\*Traffic~~ ~~\*School bus changing~~ ~~\*Fire department~~  
~~being~~ being able to come thru

We were not notified while some of the neighbors  
were - how can we be sure that all of our  
neighbors will be notified of all meetings  
in the future

No single family homes no section 8 -  
no duplex -

\* Why didn't the 'Gentlemen' identify  
themselves - when the 'public' ask where  
are the developers representatives ?? why? "





## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Rich Cornwell

Address 27925 13 Ave S.

Des Moines 503198

Phone 253-839-5795

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

1. Traffic
2. Wild life
3. Wet lands
4. Quality of life of current residents
- 
- 
- 
- 
-





## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Joe Williams

Address \_\_\_\_\_

Phone 253 941 5143

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

Study the re-connection of S 279<sup>th</sup> to  
16 Ave going Northbound. This was taken away  
with the Hiway 99 widening



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Angie Cornwall

Address 27925 13<sup>th</sup> Ave. S.

Des Moines, WA 98198

Phone 253-839-5795

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

Drainage & traffic increase  
on a dead end road.

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Phone 253-946-6041

213 ~~Terrestrial~~ ~~Drinking~~  
Notes





## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name John & Stephanie Wright

Address 28204 15th Ave S.

Federal Way

Phone 253.946.0293

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

\* Speed bumps

\* update 1998 traffic Study

\* traffic circles

\* Chicanes or entrance island

\* Widen ~~16~~<sup>28th</sup> Ave and add sidewalk

improvement.

\* Street lights in Applewood.



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Herb L. Flock

Address 1309 SO. 276<sup>th</sup> Place  
Des Moines, WA 98198

Phone (253) 839-2678

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

Added Traffic on 276<sup>th</sup> (in Roland Avenue)  
Corner of 13<sup>th</sup> & 276<sup>th</sup> is a  
hazard - (many accidents). NO  
stop or yield signs on 276<sup>th</sup>

Too many cars are speeding in the  
25 mph zone - 50 to 60 mph -



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Joe Williams

Address 27901 13<sup>th</sup> Ave S  
Des Moines, WA 98198

Phone 253 941 5143

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

New development will have 77 units housing mostly  
or completely families. 2 cars<sup>(minimum)</sup> per family = 154 cars.  
Assume  $\approx$  60% will drive to the major metropolitan city, Seattle.  
That's approx 92 ~~minutes~~ morning & 92 afternoon additional  
trips that run down 279<sup>th</sup>, north on 13<sup>th</sup>, through  
Redondo Rivera and finally north on 16<sup>th</sup> Ave. to get  
to 272<sup>nd</sup> and finally Pac Hwy.





## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Linda Bernik

Address 1303 So 276th Pl  
Des Moines Wa 98198

Phone 253 941 5814

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

There is too much uncontroled  
traffic at 13+ 276th Place already.  
The city ignored a petition that  
all neighbors signed 3 years ago!  
Call me + we will talk!



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name Irene Gregory

Address 27520 13<sup>th</sup> Ave S

Des Moines, WA 98198

Phone 253-839-1752

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

I am concerned about added traffic  
heading through Rondondo Riveria  
276 already gets so much traffic  
because of cars heading north.  
There has been accidents at the  
Intersection of 13<sup>th</sup> & 276 and near  
Misses daily.



## PACIFIC HEIGHTS

8/16/2007

Please give us a record of your attendance:

Name

Patricia Daniel

Address

1313 So. 279th St.

Des Moines, IA 50319

Phone

253-839-7829

Also, you may have questions about Pacific Heights that will not be addressed at this meeting about Traffic Calming. Please feel free to write them down and give them to a Des Moines Staff person. These will be added to the file and given consideration as the work on the subdivision continues.

- Population Density of Dev.
- Traffic Impact both N. & S. of it
- Study of property as a "land-locked" situation! - Should it even be built on? - except as very low density!
- Stability of soil & Contamination as noted many years by King Co.
- Study of drainage, underground streams, Sensitive Area Studies & Wetland Classifications
- Elevation of Properties around proposed Property



City of Des Moines  
21630 11<sup>th</sup> Ave. S Suite D  
Des Moines, Wa 98198-6398

Dan Lourie LCI  
PO Box 4021  
Kent Wa.98089

December 29 2207

Subject; Comments regarding MDNS of "Pacific Heights PUD"  
File # LUA06-037

Attn: Jason Sullivan

I am the owner of three adjacent tax lots south and within 300 feet of the proposed "Pacific Heights PUD". They are identified as follows: 28323 Tax ID 332204-9120-07  
28313 " " 332204-9062-07  
28303 " " 332204-9040-04

I believe an error has been made by not providing for needed utilities and appropriate access to surrounding properties. I would believe this would be a key issue in Des Moines and Federal Way's comprehensive plan. I notice a right of way was extended to the west to provide future access and utilities to tax lot #322204-9034. This adjoining tax lot already has access from S282nd PL and to the south by S284th. I realize my property is now in Federal Way but there should be a process for planning across borders. An additional factor is the State Hwy 99 widening and imposing wall which makes the HWY99 access possibly impracticable. I believe both Federal way and Des Moines Transportation department should give consideration on traffic flows as well.

In summary I would like equal consideration of my property as was given to the property east of Applewood, "tax lot #322204-9034". Thank you

Dan Lourie Pres LCI

Do we really need a sub division this big in a declining housing market bringing more traffic to the area? Plus filling in wetlands when we have to save an area of blackberry bushes to comply with rural codes. This is just a bad idea only brought forth by some guy to make money at the expense of more traffic, crime, declining way of life here. we do not need to saturate this area with more housing, like my god we are so stacked and packed as it is do we really need this just so the des moines can tax more people to fund some pork barrel project ? I vote no! so just say no to file #LUA06-037!

We do not need the extra hassle and people here,  
Scott Isenberg

# City of Des Moines



PLANNING, BUILDING AND PUBLIC WORKS  
www.desmoineswa.gov  
21630 11TH AVENUE SOUTH, SUITE D  
DES MOINES, WASHINGTON 98198-6398  
(206) 870-7576 FAX (206) 870-6544



December 19, 2007

Re: LUA06-037; "Pacific Heights Planned Unit Development"

Dear Resident:

Thank you for taking the time to provide comments regarding the proposed Pacific Heights Project. Involvement of community members is essential during the review phase to ensure the City is aware of the community's concerns. The City is committed to ensuring that proposed projects are sensitive to the needs and concerns of the community.

Either during the August 16, 2007 Community Meeting or one of three public comment periods you either submitted written comments to the City expressing a concern(s) about the Pacific Heights project or requested simply to be included on the correspondence list. Below is a list of the concerns that were provided to the City and the City's response to each of those concerns:

## TRAFFIC STUDY

1. **Concern:** The City of Des Moines was relying on a 1998 Traffic Study to evaluate the impacts of the proposed Pacific Heights Project on the adjacent neighborhoods.

**Response:** The City of Des Moines had concerns with the 1998 study given age of the study, changes in the project, and changes to the street network. In order to fully understand the impacts the City of Des Moines hired a Traffic Consultant to prepare a Traffic Impact Assessment and identify needed mitigation measures for the neighborhood. A copy of this report is available on the City of Des Moines website at the following link [http://www.desmoineswa.gov/dept/development/plan/dev\\_activity.html](http://www.desmoineswa.gov/dept/development/plan/dev_activity.html).

## TRAFFIC CIRCULATION

1. **Concern:** The reconfiguration of the 16<sup>th</sup> Avenue South, South 279<sup>th</sup> Street, and Pacific Highway Intersection will significantly increase the amount of traffic in the Redondo Riviera Neighborhood if the Pacific Heights project is approved by the City.

**Response:** Based on the updated Traffic Impact Assessment, staff will be requesting that the City Council require the installation of traffic calming measures in Redondo Riviera to mitigate for the increase traffic within the neighborhood. Traffic calming is already required for the Applewood neighborhood.

2. **Concern:** The new connection between South 279<sup>th</sup> Street and 15<sup>th</sup> Avenue South in Applewood has not been necessary for the last 18 years; why is the connection needed now?

**Response:** The proposed connection has been planned since the earlier 90's when the Applewood Subdivision was approved by King County. The recorded Applewood Plat shows the cul-de-sac as temporary and is partially located on private property. Additionally, the connection was shown on the original Pacific Place (now Pacific Heights) layout in the



mid 90's. Both the Cities of Federal Way and Des Moines agree with the connection as a general engineering practice.

3. **Concern:** The new connection will create substantial amounts of cut-through traffic to avoid traffic on Pacific Highway.

**Response:** Based on the original traffic study and the new traffic impact assessment, the extension of 15<sup>th</sup> Avenue South to South 279<sup>th</sup> Street will not create a practical or viable route for traffic attempting to avoid Pacific Highway.

4. **Concern:** There should be a connection to tax parcels 3322049120, 3322049062, 3322049040 via the private access tract within the proposed subdivision.

**Response:** The Cities can not require that the applicant provide access to the above tax parcels via the private access tract as a condition of approval due to restrictions limiting jurisdictions from mitigating existing conditions not created by the proposed development and the terms of the settlement agreement.

## DENSITY

1. **Concern:** How was the density for the project determined or the density exceeds the maximum density allowed in the zone.

**Response:** The majority of the property is located within the City of Des Moines (9.2 acres) and is zoned RS-7200 Residential: Single Family 7,200. The other 3.33 acres of the site is within the City of Federal Way of which 2.87 acres are zoned RM-1800: Multifamily 1 unit per 1,800 square feet and 0.46 acres are zoned RS7.2: Single Family 1 unit per 7,200 square feet. The Des Moines Comprehensive Plan designated the majority of the property as SF: Single Family. The other portion of the site within the City of Federal Way is primarily designated as Multifamily and the other smaller portion as Single Family, High Density by the Federal Comprehensive Plan. Based on the zoning information and the limited density transfer provisions for the protection of environmentally sensitive areas established by DMMC 18.86.090, the maximum number of units allowed on the site is 114. The proposed development includes the development of 77 housing units which is less than the allowable maximum density.

## NATURAL ENVIRONMENT

1. **Concern:** The project will have a negative impact on the wetlands currently located on the subject property and the Wetland Study was completed in 1997.

**Response:** The wetland methodology used in the 1997 wetland study was the same methodology that the City would have used if the application been submitted for the first time on November 8, 2006. The project will have an impact on one of the wetlands; however, the fill of this wetland will be mitigated by the creation of additional wetland adjacent to the remaining wetland. The filling of one of the wetlands will not violate the Des Moines Municipal Code.

2. **Concern:** The project will have a negative impact on the wildlife on the property.

**Response:** According to the Wildlife Study prepared by Wetland Resources dated March 25, 1998 portions of the site do contain some wildlife habitat; however, these habitat areas are less than optimal due to the high degree of historical human intervention. Therefore, the level of wildlife usage is below the levels that would be expected given the size of the property. The site is primarily used by small mammals birds, and amphibians for foraging and habitation. The site is also completely surrounded by development which has further limited the use of the site by wildlife. Finally, the site contains no species of animals or plants that are listed as endangered or threatened species by the State of Washington or the Federal Government.

3. **Concern:** The soil on the site is contaminated.

**Response:** Based Environmental Site Assessment dated September 23, 1997 prepared by Earth Consultants, the previous owner excavated and sold gravel from the property. Grading permit documentation reviewed during the preparation of the Environmental Site Assessment indicated that fill materials were placed both on the northeast part and on the south central part of the subject property at various periods throughout the 1980s. Documentation on the fill material indicated that it was primarily construction excavation soil and demolition concrete and asphalt rubble. Based on the historical land uses and potential soil contamination Earth Consultants collected soil samples to determine if soil was contaminated and if the contamination exceed the clean up levels established by the Model Toxics Control Act. The results of the soil test showed that no HVOCs, PCBs, pesticides, or herbicides were detected in any of the samples submitted for analysis. Concentrations of oil [measured in units called Total Petroleum Hydrocarbons (TPHs)] detected in samples TP-1-1 (120 mg/kg) and TP-2 (150mg/kg), were below the Model Toxics Control Act (MTCA) Soil Cleanup Level of 200 mg/kg for TPHs. The Phase 6 Environmental Site Assessment concluded no environmental hazards existing on the site that would limit the development of the property.

## DRAINAGE

1. **Concern:** The proposed development will create drainage problems for the adjacent neighborhoods.

**Response:** Surface Water Management staff has reviewed the Preliminary Plat Plans and the Preliminary Technical Information Report (TIR) prepared Peterson Consulting Engineers dated November 2006; revised March 2007 and June 2007. Per the Agreement, the 1998 King County Surface Water Design Manual was applied to the project. Based on the review of the plans, specifications and technical reports, staff has determined that the below described facilities are consistent with the 1998 King County Surface Water Design Manual.

Stormwater from the site is collected and conveyed to a detention/treatment vault that is appropriately sized to sufficiently detain surface water runoff and meets the Basic Water Quality Menu for treatment. The proposed location for the storm facility will be located within the subdivision and stormwater exiting the facility will be dispersed prior to discharging at the "natural discharge location" of the site, the location where runoff leaves the site under existing site conditions, as defined by the King County Manual.



## HOUSING TYPE

1. **Concern:** The homes will be used for subsidized housing or section 8 housing.

**Response:** The applicant has not submitted any information to the City indicating that the housing will be subsidized housing.

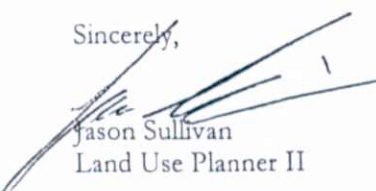
2. **Concern:** The type of units proposed creates a multifamily housing development in a single family zone.

**Response:** The original Pacific Place project (now named Pacific Heights) was initiated while in King County and consisted of a 120 Unit Condominium which the City of Des Moines believed was inconsistent with the surrounding single family land uses. Soon after the annexation was approved, Granville Southern filed an appeal of the annexation decision with the King County Superior Court. In order to settle the litigation, The Cities of Des Moines and Federal Way, along with Granville Southern and Donald and Marie Tavis entered into the Agreement in 2000. This Agreement attempted to balance the City's use compatibility concerns about multifamily residential condominium buildings in a single family zoned area while maintaining a majority of the entitled density under the original application. The Agreement envisioned a proposed development pattern that is considered attached single family which is more compatible with the surrounding neighborhoods. This compromise preserved a fundamental difference between multifamily residential units and single family homes: land ownership. In the attached single family home development each home is located on its own lot and is owned fee simple in the same manner as the detached single family homes in the surrounding neighborhoods.

The applicant has also applied for a Planned Unit Development (PUD) which is a permitted use in the Single Family Zone (RS-7200) pursuant to DMMC § 18.08.020(16). Within a PUD the applicant is authorized to cluster homes on smaller lots as long as the PUD's density is consistent with the density for the underlying zone. Additionally, the applicant can have attached units within the PUD pursuant to DMMC 18.52.080. Therefore, the project is consistent with the permitted uses established by the underlying zoning classification.

Thank you for your comments regarding this project. If you have any questions or need further assistance, please feel free to contact me by phone at (206) 870-6551 or by email at [jsullivan@desmoineswa.gov](mailto:jsullivan@desmoineswa.gov).

Sincerely,



Jason Sullivan  
Land Use Planner II

CC: Dan Brewer – Assistant Public Works Director for Transportation and Engineering  
Loren Reinhold - Assistant Public Works Director for Utilities and Environment

City of Federal Way  
Attn: Deb Barker – Senior Planner  
PO Box 9718  
Federal Way, WA 98063-9718



EXCERPT FROM DRAFT MINUTES  
DES MOINES PLANNING AGENCY REGULAR MEETING

7:00 p.m.

February 4, 2008

At 7:00 p.m., Chair Proulx called to order the Des Moines Planning Agency in the City Council Chambers, 21630 11<sup>th</sup> Avenue South, Suite B.

PLEDGE OF ALLEGIANCE led by Agency Member Savage.

ROLL CALL—Present: Chair Proulx, Vice Chair Polwarth, Agency Members Riecks, Savage, Skelly, Bekkerus and Prindle. Staff included Development Services Manager Robert Ruth, Senior Planner Denise Lathrop, Planner II Jason Sullivan and Planning Aide Dave Steen, Agency Clerk.

OATH OF OFFICE: Development Services Manager Ruth administered the Oath of Office to the Planning Agency's two new members, Aaron Bekkerus and Peter Skelly.

ELECTION OF OFFICERS:

At the request of Chair Proulx, Development Services Manager Ruth conducted the Election of Officers. First, he asked for nominations for Chair. Mr. Savage, seconded by Mr. Polwarth, nominated Mr. Proulx for Chair. There were no other nominations. On a voice vote, Mr. Proulx was elected Chair with none opposed.

Second, Manager Ruth asked for nominations for Vice Chair. Chair Proulx, seconded by Mr. Prindle, nominated Mr. Polwarth for Vice Chair. There were no other nominations. On a voice vote, Mr. Polwarth was elected Vice Chair with none opposed.

MINUTES: Minutes of the September 12, 2007 meeting were available for review. Agency Member Savage asked that a change be made to clarify his attendance at the September 12 meeting.

MOTION by Agency Member Riecks, seconded by Vice Chair Polwarth, and passed unanimously to adopt the minutes of the September 12, 2007 meeting as amended.

CORRESPONDENCE: None

PUBLIC COMMENT: None

ADMINISTRATION REPORTS:

Crestwood Park Update

Manager Ruth reported that the City Council approved the Crestwood Park subdivision conditionally soon after the Planning Agency's recommendation to do so at the Agency's last meeting.

Manager Ruth also mentioned that funds are available for continuing education for Agency Members who desire to take advantage of courses available from the American Planning Association.

## NEW BUSINESS

### City File No. LUA06-037: "Pacific Heights," a 77 lot Single Family Residential Planned Unit Development (PUD)

Chair Proulx noted the large number of citizens in attendance and asked that the Agenda order be reversed in order to honor their commitment of time.

Planner II Jason Sullivan outlined his presentation in two parts: first, the history of the Settlement Agreement between the developer and the Cities of Federal Way and Des Moines; and second, the Zoning review of this project for over 12 acres located South of South 279<sup>th</sup> Street and East of 13<sup>th</sup> Avenue South. He stated that there have been changes made to the Settlement Agreement's Illustrative Site Plan with the mutual agreement of City Staff and the current Developer and expressed his understanding that it would be the Agency's responsibility either to recommend the City Council's approval of the project if it finds it in accordance with the Settlement Agreement or recommend against the City Council's approval if not.

Planner Sullivan briefly reviewed the history of the original 1997 120 unit condominium proposal made to King County; the subsequent Boundary Review Board's approval of the area's annexation to the Cities of Des Moines and Federal Way in 1998; the appeal of the Boundary Review Board's decision by the developers and subsequent Settlement Agreement, between the developer and the cities, that established guidelines for any future review of the proposal. He noted that the proposal was dormant until a new owner, Pacific West, LLC opened discussions with Staff and submitted the necessary documents for review of the project, now proposed as 77 attached and detached single family lots.

Planner Sullivan emphasized that the project was reviewed for its consistency with the Des Moines Comprehensive Plan, the Subdivision Code and the 1998 King County Surface Water Design Manual and found to be consistent with these documents. He indicated that at this point, the only change that would need to be made was discovered after the City of Des Moines commissioned a new Traffic Study in 2007. It showed that the intervening changes of access for S. 279<sup>th</sup> St. to Pacific Hwy. S. and 13<sup>th</sup> Ave. S. to the Redondo Riviera neighborhood would now reflect a need for traffic calming to be added in the Redondo Riviera area as well as in the Applewood neighborhood to the south of Pacific Heights. He stated



that the City of Des Moines would need to be responsible for the Redondo Riviera traffic calming since it cannot require the developer to do this according to the Settlement Agreement.

Chair Proulx opened the floor to comments from the public, asking people to step to the microphone, state their name and address and speak for three minutes or less without repeating comments previously made.

Michael Montgomery, 28008 13<sup>th</sup> Ave. S., Des Moines, WA 98198: Mr. Montgomery pointed to his property on the site map, west of the project. He stated his concern about the connection between this project and 13<sup>th</sup> Ave. S. *(Staff clarified that the development has no direct access to 13<sup>th</sup> Ave. S, but that pre-planning is required because of a large vacant property to the southwest of the property.)* He also asked whether the developer would be installing a fence along the outer edge of the property. *(Staff indicated it would not be required, but that the developer does plan to install a fence.)* Mr. Montgomery also asked about the current wetland along the western edge of the property. *(Chair Proulx asked Planner II Sullivan to respond. Planner Sullivan indicated that this small wetland would be filled and mitigated in the area of the large central wetland.)* Mr. Montgomery closed his comments by stating that there are 6 coyotes living in the area and asking that the City buy the property and make it a park.

David Siebenhaler, 1417 S 282nd Place, Federal Way, WA 98003: Representing the Applewood Homeowners Association asserted that the Pacific Heights would represent double the density of Applewood. He stated that the extension of 15<sup>th</sup> Ave. S., from Pacific Heights through Applewood, would double the amount of traffic through Applewood. He argued that traffic calming measures would not be sufficient and asked that either 15<sup>th</sup> Ave. S. not be opened through to the south, or that it be gated and only opened for access by emergency vehicles. He cited the planned gate at the Landmarque development and the access plans for the Highline View Estates development as indications that the City of Des Moines is aware that high density development should not be allowed at the expense of existing lower density neighborhoods. *(Chair Proulx asked whether the Settlement Agreement requires that the City abide by the findings of the early Traffic Study. Planner Sullivan noted that the Settlement Agreement says the City cannot require a new traffic study. But he said the City commissioned its own traffic study, which clarified that if access was not opened through Applewood, then 100% of the traffic generated by Pacific Heights would be forced through Redondo Riviera. He also mentioned that the Assistant City Engineer for Transportation, Dan Brewer, was available tonight for more expert comments about transportation issues. Mr. Sullivan also clarified that the Highline View Estates accesses to S. 240<sup>th</sup> St. through 22<sup>nd</sup> Ave. S. and 22<sup>nd</sup> Pl. S. have been removed during later stages of planning.)*

Victor Vargas, 28312 15<sup>th</sup> Ave. S. Federal Way, WA 98003: Mr. Vargas argued that hundreds of fast driving immature people would be gaining access to the



Applewood neighborhood. He also asked for a gate to be provided in order to preserve the quiet retirement neighborhood he and his neighbors enjoy. *(Mr. Riecks asked Mr. Vargas how he would modify the project to satisfy his concern.)* Mr. Vargas reiterated his strong desire for a gate on 15<sup>th</sup> Ave. S. that would only be opened for emergency access.

Rich Cornwell, 27925 13<sup>th</sup> Ave. S., Des Moines, WA 98198: Mr. Cornwell commented about:

1. The total impact of recent progress on the Redondo Heights area
  - a. Crestwood Park subdivision planned to the north
  - b. New Business, LA Fitness, to the east
  - c. Pacific Heights subdivision to the south
  - d. New configuration of Hwy. 99 access from 16<sup>th</sup> Ave. S. and S. 279<sup>th</sup> St.; and,
2. His concern about the water that would flow from the filled wetland; and,
3. His concern about the narrow streets of Redondo Riviera being open to much more new traffic when it is difficult to navigate them safely now.

Bryan Hanson, 28230 15<sup>th</sup> Ave. S., Federal Way, WA 98003 : Mr. Hanson argued that neither Traffic Study covered a wide enough study area. He stated that if they had taken information from more of the surrounding areas to the south of Applewood, they would show more than a quadrupling of traffic through Applewood on 15<sup>th</sup> Ave. S. He argued that there would be more than 1,000 trips per day. He repeated the request for an “emergency only” access gate on 15<sup>th</sup> Ave. S. between Pacific Heights and Applewood. He also argued that before opening any of the new connections a new traffic study with a wider area of study should be undertaken.

Ellen LaVita, 28234 15<sup>th</sup> Ave. S., Federal Way, WA 98003: Ms. LaVita pointed out the poor, narrow access to S. 288<sup>th</sup> St. at Pacific Hwy. S. on 16<sup>th</sup> Ave. S. She argued that it is a very dangerous access, narrow and curved, with no sidewalks, and should not be expected to bear more traffic than it already does. She pointed out that it is very low on the City of Federal Way’s priority list for improvement.

Craig Davis, 28234 15<sup>th</sup> Ave. S., Federal Way, WA 98003: Mr. Davis reasoned that the reason 16<sup>th</sup> Ave. S. is not high on the City of Federal Way’s priorities for improvement is that it is between two steep slopes and would be very difficult to widen or otherwise improve. *(When Chair Proulx asked the whereabouts of 16<sup>th</sup> Ave. S., Planner Sullivan noted that it is the switchback road up to the S. 288<sup>th</sup> St./Pacific Hwy. S. intersection south of Applewood, not on the maps of this project.)*

Dan Lourie, 27405 12<sup>th</sup> Pl. S., Des Moines, WA 98198 : Mr. Lourie asked how Road A came to be proposed, pointing out that there is already a road in Applewood that could serve the intended purpose. He stated that he owns property to the east of Pacific Heights. *(Planner Sullivan noted that planners*

*traditionally plan for future access when there is a vacant property near a development. He stated he was not involved in the initial planning for this project in 2000 and could not give specific reasons for the planned street. He pointed out Mr. Lourie's properties south and east of Pacific Heights and noted Mr. Lourie's desire to have access created through Pacific Heights to his property for the potential future 90 units that could be developed there. He pointed out that a letter from the City of Federal Way states that Mr. Lourie's property would be able to have access directly to Pacific Hwy. S. Further, he said the City of Des Moines cannot require the developer to provide access to Mr. Lourie's property nor would Staff recommend it because it would bring even more traffic through the new development and its neighbors. He mentioned that an appeal of the City's Mitigated Determination of Nonsignificance has been filed and will be heard at the City Council's Public Hearing regarding this project. Manager Ruth also noted that the access[Road A] to the west is simply for better access possibilities in the future.)*

Wanda Vargas, 28312 15<sup>th</sup> Ave. S., Federal Way, WA 98003: Ms. Vargas stated her concern for the safety of 16<sup>th</sup> Ave. S.

Janice Siebenhaler, 1417 S 282nd Place, Federal Way, WA 98003: Ms. Siebenhaler noted her concern that so much traffic would be traversing a Federal Way neighborhood to get to a Des Moines neighborhood.

When there were no more comments from the public, Chair Proulx called on Planner Sullivan for further Staff comments. Planner Sullivan pointed out that the density of the proposed Pacific Heights neighborhood does not exceed the density allowed to be on the property by the current Subdivision Code. He noted that Assistant City Traffic Engineer Dan Brewer might be able to add some helpful perspective.

Chair Proulx called on Engineer Brewer, who noted changes in the surrounding streets and roads as his reason for hiring a consultant to inquire whether the original traffic study was still relevant. He reported that the approximately 700 trips per day that could be expected through Applewood, including new Pacific Heights traffic, would still be below the 1,000 trips that would represent the accepted maximum. Further, he noted that similar impacts would apply to the Redondo Riviera neighborhood, but that new study indicated streets and intersections would function within acceptable ranges.

Engineer Brewer warned that putting Traffic Calming measures in Applewood without doing something similar in Redondo Riviera, now that access there has changed, would risk sending heavier traffic north. He said his recommendation would be that Traffic Calming measures be installed in Redondo Riviera also.

Finally, Engineer Brewer briefly described a project he is trying to develop in conjunction with his counterparts in the Cities of Kent and Federal Way, whereby



16<sup>th</sup> Ave. S. would connect with Pacific Hwy. S. at the new signal light at McDonalds, closing off S. 279<sup>th</sup> St. from Pacific Hwy. S., and reconfiguring 16<sup>th</sup> Ave. S. to connect with S. 279<sup>th</sup> St. as a neighborhood collector/distributor. He said the project is in its infancy, but that it is in the City's 6 year Capital Improvements Plan.

After several Agency Members sought clarification from Engineer Brewer regarding the traffic issues, Chair Proulx thanked him for his input and gave the floor Planner Sullivan. Planner Sullivan emphasized that his discussion of the current Zoning laws was for informational purposes only and that the City remains bound to the Settlement Agreement regarding any new requirements of the developer. He then asked Assistant City Engineer for Surface Water Management Loren Reinhold to address the Agency regarding his perspective on the project.

Engineer Reinhold noted that although the Settlement Agreement committed the City to reviewing the Surface Water aspects of the project to the 1998 King County Surface Water Design Manual, the changes that have come with the new 2005 Manual would only have brought subtle changes to the project. Level II flow control still applies, he said, requiring the developer to design a system that cuts runoff from the project site in half. He described a very large vault for collection and quality treatment. He also mentioned that the developer has been required to design a system so that the large wetland would be protects, neither losing nor receiving any significant amounts of water. Referring to the Technical Information Report, he said this was done.

Responding to questions from the Agency regarding surface water flows toward the adjacent properties on 13<sup>th</sup> Ave. S., to the west, Engineer Reinhold reiterated that the project is required to cut the discharge in half. Planner Sullivan added that four or five of the property owners to the west declined the opportunity when they were approached by the developer asking them to allow an easement through their property so that a pipe could take the discharge storm water to the City drain system running along 13<sup>th</sup> Ave. S.

MOTION by Agency Member Riecks, seconded by Agency Member Skelly, and passed unanimously, to recommend that the City Council approve the preliminary PUD subdivision entitled Pacific Heights subject to the mitigation terms identified in the Agreement included as Attachment 1 and changes as illustrated on Attachment 10 to the January 7, 2008 administration report.

At 9:45 p.m., Chair Proulx called for a brief adjournment of the meeting for a short break. At this time, Agency Member Savage left the meeting. At 9:52 p.m., Chair Proulx reconvened the meeting.



Midway Subarea Plan briefing—to be completed

NEXT MEETING DATE—*March 3, 2008*

ADJOURNMENT

MOTION by Chair Proulx, seconded by Agency Member Skelly and passed unanimously, to adjourn the meeting at 10:25 p.m.

Respectfully Submitted,

David Steen  
Planning Aide and Agency Clerk

RECEIVED  
JAN 10 2008

City of Des Moines  
21630 11<sup>th</sup> Ave. S Suite D  
Des Moines, Wa 98098-6398

Dan Lourie LCI  
PO Box 4021  
Kent WA 98089  
206-391-8750

January 10, 2008

Subject; Appeal MDNS of File# LUA06-37 "Pacific Heights PUD"  
Proponent: Pacific West Development, LLC

To Whom It May Concern:

This appeal from a position of Federal Way and Des Moines together not following a comprehensive plan of development. That goal is to encourage uniform development of an integrated fully accessible public transportation system that will facilitate present and future travel demands with minimal environmental impact to the community as a whole.

The layout of streets should provide for the connectivity of existing streets in adjoining subdivisions or their proper projection when adjoining property is not subdivided.

My grievance is that a new 50 foot ROW is being proposed to connect tax parcel #3222049010 to the west providing a 3<sup>rd</sup> ROW access point to the tax lot. Tax lot # 3222049010 already has access by S282nd PL and S. 284th ST.

The comprehensive plan of Federal Way & Des Moines would be better followed by switching the ACCESS TRACT C going to the east of 15<sup>th</sup> AVE. S. with the 50 foot ROW going west to tax lot #3222049010. It is redundant to add another ROW to Tax lot#3222049010 and then ignore a more needed connecting street to my tax lots: 332204-9120, 3322049062, and 332204-9040.

Thank you for your consideration.

Dan Lourie  
Pres LCI



Community Development Department  
Building Division

Fee Receipt

Copy Reprinted on 01-10-2008 at 16:26:41

RECEIPT NUMBER: R08000048  
Paid By: LOURIE CONTRACTING, INC PO BOX 4021 KENT, WA 98089  
Payment Type: Check  
Check No.: 10611

APD #: TR08-0018 TYPE: Misc. Transaction

ACCOUNT CODE: 000.369.90.00.00

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NAME: DAN LOURIE

LOCATION: APPEAL MDNS OF LUA06-37

TRANSACTION DATE: 01/10/2008

ITEM TYPE:

ITEM DESCRIPTION: Miscellaneous

QUANTITY: 1

SUB-TOTAL: \$800.00

TAX: \$0.00

TOTAL: \$800.00

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**SUBDIVISION CRITERIA**  
**(DMMC § 17.16.130(2))**

- (2) Decisional Criteria. The city council may approve the proposed preliminary subdivision only if it finds that:
- (a) It is consistent with the applicable provisions of the comprehensive plan, zoning code, shoreline master program, and other city policies and regulations; and
  - (b) It is consistent with the applicable provisions of chapter 17.36 DMMC (layout and design of subdivisions); and
  - (c) There are adequate provisions for open spaces, drainage ways, rights-of-way, sidewalks, and other planning features that assure safe walking conditions for pedestrians, including students who walk to and from school, easements, water supplies, sanitary waste, fire protection, power service, parks, playgrounds, and schools; and
  - (d) It will serve the public use and interest and is consistent with the public health, safety, and welfare. The city council shall be guided by the policy and standards and may exercise the powers and authority set forth in chapter 58.17 RCW, as presently constituted or as may be subsequently amended;
  - (e) The proposed preliminary subdivision provides for coordinated development with adjoining properties or future development of adjoining properties including but not limited to provisions for improved or shared access where appropriate.

## **COMPREHENSIVE PLAN GOALS:** **SELECTIVE EXCERPTS**

The Des Moines Comprehensive Plan provides the policies for future development within Des Moines. Chapters 1 – 8 of the Comprehensive Plan provide specific guidance for the development in the area. Below is a list of the applicable goals within those chapters:

**1-01-01** To actively guide and manage growth in a way that preserves and enhances the quality of life in Des Moines and its diverse neighborhoods

**2-01-01** Preserve and enhance the diverse residential neighborhoods, of the community and serve them with vibrant business districts, open space, recreational facilities, affordable housing, and other supportive land uses; protect environmentally sensitive areas, and promote economic development.

**3-01-01** To create an efficient and safe transportation system within, through, and around Des Moines, that provides mobility for future motorists, pedestrians, bicyclists, and transit patrons

**4-01-01** To protect, improve, and sustain environmental quality through best management practices and the use of best available science

**4-01-02** To protect environmentally critical areas from damage caused by encroachment and development.

**4-01-03** To prevent flooding, erosion, sedimentation, water quality, and habitat degradation, and to protect, restore, and enhance all surface waters

**4-01-07** To protect all streams and wetlands that are in the public interest

**5-01-01** To ensure adequate public facilities appropriate for the delivery of public services and utilities to accommodate the demand associated with current and future land uses. Such services and utilities should be provided in a manner that maximizes public safety and minimizes adverse environmental impacts.

**6-01-01** Provide adequate and accessible recreational facilities and programs that are responsive to the diverse interests and needs of people of all ages, income levels, cultural or educational backgrounds, or physical abilities. Such recreational facilities and programs should satisfy outdoor and indoor, active and passive recreational needs, and be appropriately distributed throughout the community

**6-01-06** Utilize a ratio of 8.5 acres per 1,000 population combined park land (including mini, neighborhood, community, special use, sports fields/complexes, trails and pathways) as a general guide in the acquisition of park lands. Conservancy parks and open space which are typically undeveloped, have a great value to the community but



may not include significant opportunities for recreational use and therefore are not included in the ratio

**6-01-07** Ensure community recreational needs are considered during planning stages of all multifamily residential development, subdivisions, planned unit development and business park development. The minimum acceptable land area for subdivision park development is 0.5 acres of land (mini-park). Fee in Lieu may be used in those situations where the minimum land requirement cannot be met. Development should be combined with adjacent recreational, open space or other municipal facility. Joint use of such recreation areas should be encouraged. Design and development of such projects should be coordinated with the Parks, Recreation and Senior Services Department as part of the building permit process.

**7-01-01** Encourage the development, preservation, or replacement of housing stock that is affordable to all economic segments of the community.

**8-01-01 Residential Neighborhood Preservation**

- (1) To continue to provide residents with stable and relatively quiet residential neighborhoods.
- (2) To maintain an adequate residential tax base.
- (3) To ensure that residential neighborhoods are protected from undue adverse impacts associated with incompatible land uses or transportation facilities including, but not limited to, noise, air and water pollution, glare, excessive traffic, and inadequate on-site parking.
- (4) To ensure that residential neighborhoods are identified and protected from detrimental environmental noise levels.
- (5) To ensure that residential streets are protected from heavy commercial traffic that inhibits the free flow of traffic or exceeds prescribed weight limits.



## **COMPREHENSIVE PLAN POLICIES & STRATEGIES:** **SELECTIVE EXCERPTS**

The Des Moines Comprehensive Plan provides the policies for future development within Des Moines. Chapters 2 – 7 of the Comprehensive Plan provide specific guidance for the development in the area. Below is a list of the applicable policies and strategies within those chapters:

**2-03-05** Promote a land use pattern, scale, and density that supports public transportation services and encourages people to walk and bicycle, as well as provide convenient and safe automobile usage.

**2-04-09** Allow master planning and planned unit development techniques for unique or unusual sites where innovative development patterns are desirable.

**2-04-14** Require that new development maintain and enhance on-site open spaces, and provide on-site recreation facilities in new subdivisions and multifamily developments or pay appropriate in-lieu fees as required by the DMMC.

**2-04-15** Seek to minimize negative impacts of new development on neighborhoods by providing uniform standards at the interface of incompatible land uses which address, but are not limited to, the following: site access and circulation; structure height, bulk, and scale; preservation of views; separation of buildings; landscaping; density; and noise buffering

**3-03-08** Provide facilities to accommodate safe pedestrian and bicycle movement y appropriate in-lieu fees as required by the DMMC.

### **3-04-03 Pedestrians and Bicycles**

- (1) Require that new roadway construction, reconstruction, or widening include sidewalks that are separated by grade and/or distance from vehicular traffic lanes.
- (2) Construct/maintain adequate sidewalks along streets within the Downtown Neighborhood to create a safe and attractive pedestrian environment. Incorporate street furniture such as benches, landscaping, attractive light standards, drinking fountains, bicycle racks, and public art that enhance the attractiveness of the downtown as a pedestrian environment.
- (3) Identify pedestrian corridors linking neighborhoods to schools, parks, transit routes, and businesses. Give high priority to constructing sidewalks and walkways within those corridors where existing pedestrian facilities are unsafe or indirect.

- (4) Construct sloped ramp curbing at all pedestrian street crossings in order to accommodate the needs of the elderly and the physically challenged.
- (5) Identify convenient and safe bicycle corridors that support the use of bicycles as a means of general transportation as well as a recreational activity. Within bicycle corridors, construct new roadways with sufficient width to allow for safe bicycling. Where possible, separate bicycle lanes from sidewalks and pedestrian trails.
- (6) Encourage or require the installation of bicycle racks within new and existing school, multifamily, and commercial developments where appropriate. Require bicycle racks that accept standard types of bicycle locks.
- (7) Require new commercial and residential developments to construct walkways that provide safe and convenient pedestrian linkages with adjacent streets.

**3-04-07**

**Miscellaneous**

- (1) Incorporate street trees and landscaping in the construction of new roadways to visually soften the expanse of paving, enhance the compatibility of roads with adjacent development, and improve pedestrian safety by separating vehicular and pedestrian circulation.
- (2) Require developers to maintain landscaping when required as part of a subdivision, commercial project, or other development.
- (3) Design roads and other transportation facilities to fit the character of the neighborhoods through which they pass.
- (4) Construct roads and other transportation facilities to minimize adverse impacts upon surface water runoff, drainage patterns, and environmentally sensitive areas.
- (5) Phase construction of roadway and other transportation facilities to minimize any inconvenience to and negative impact upon adjacent property owners.
- (6) Coordinate the construction of roadways and utilities to avoid the need for road repairs resulting from utility construction after road construction.
- (7) Actively enforce traffic codes, including those affecting pedestrians and bicyclists.
- (8) Conduct public meetings and hearings prior to and during the design of major transportation facilities, to inform the public and to gather public input into the design.



- (9) Incorporate sound absorption devices, landscaping, earthen berms and other natural or artificial features that help mitigate the adverse noise impacts generated by transportation facilities.

**4-03-06** Balance social, economic, and environmental goals to land use planning activities.

**4-03-08** Promote the preservation of native vegetation and mature trees; revegetation; and appropriate landscaping to improve air and water quality and fish and wildlife habitat.

**4-03-10** Regulate public and private development proposals in ways to insure that the valuable functions of natural resources are preserved, restored, or improved.

**4-03-11** Analyze the chain of environmental impacts from public and private development proposals in context of the whole watershed. Approve, condition, restrict, or deny development proposals based upon accurate and well-documented environmental information.

**4-03-19** Manage surface water using a watershed approach, with responsibility shared among the City of Des Moines and affected jurisdictions. Emphasize educational programs and implementation of Best Management Practices to reduce pollution entering surface waters.

**4-03-23** Ensure that stream and wetland buffers be of adequate size to protect critical wildlife species and habitat.

**4-04-01      Conservation Planning**

- (1) Prepare studies of Des Moines area watersheds, identifying environmental problems and short-term and long-term means for solving the problems.
- (2) Identify and rank capital improvement and land acquisition projects that can prevent flooding, protect surface and ground water quality, stabilize hillsides, and protect, restore, and enhance fish and wildlife habitat.
- (3) Require that development proposals provide measures for restoring or enhancing any lost or degraded functions provided by the environment.
- (4) Grading and construction activities shall implement erosion control Best Management Practices and other development controls as necessary to reduce sediment and pollution discharge from construction sites to minimal levels.
- (5) Regulate and plan land use and condition development proposals in ways that protect mature trees, native vegetation, stream flow, fish and wildlife habitat, groundwater recharge, and air quality, as well as natural topographic, geologic, and hydrologic features.



- (6) Promote public involvement in restoring, protecting, and enhancing natural resources through such programs as Adopt-A-Stream and the Backyard Wildlife Sanctuary Program, by working with local educational institutions, and by integrally involving citizens in developing, implementing, and monitoring environmental programs.
- (7) Maintain and monitor the Shoreline Master Program to control and regulate development in the shoreline area.
- (8) Maintain development regulations and a permitting system to prevent the destruction of critical areas including wetlands, areas with a critical recharging affect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.
- (9) Designate, map, and protect habitat networks throughout the City of Des Moines from significant adverse environmental impacts.
- (10) In compliance with RCW 36.70A.172, the City should include a record of evidence that it has given "special consideration" to conservation or protection measures necessary to preserve or enhance anadromous fisheries. The record should be developed using the criteria set out in WAC 365-195-900 through 365-195-925 to insure that conservation or protection measures necessary to preserve or enhance anadromous fisheries are grounded in BAS.
- (11) Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, instream structural diversity, migratory access, estuary and nearshore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources.
- (12) Encourage the integration of native plant communities and wildlife habitats with other land uses where possible. Encourage or require that development protect wildlife habitat through site design and landscaping. Encourage or require that new development within or adjacent to wildlife habitat networks incorporate design techniques that protect and enhance wildlife habitat values.

- (13) Provide technical assistance, education, and information to citizens and groups wishing to install wildlife enhancement projects. Encourage public demonstration projects that show the range of possibilities for integration of wildlife into a variety of land uses. Consider demonstration projects done jointly by the City and a private landowner or organization.
- (14) To the extent permitted by state and federal law, in order to minimize adverse impacts related to noise, protect fish and wildlife habitat conservation areas from environmental noise levels that exceed 55 Ldn (dBA), or the Ldn in existence on the effective date of this element, whichever is higher. To the extent permitted by state and federal law, a reduction in the exterior noise level shall become the new maximum exterior noise level.

**4-04-02     Environmentally Critical Areas**

- (1) Identify environmentally critical areas and promulgate performance standards and development regulations for any proposed developments within or adjacent to them.
- (2) Develop and update regulations on development in wetlands and streams, and require an undevelopable buffer of preferably native vegetation adjacent to them that is adequate in size to preserve the natural and beneficial values served by wetlands and streams.
- (3) The City of Des Moines shall evaluate programs and regulations to determine their effectiveness in contributing to ESA listed species conservation and recovery, and shall update and enhance programs and plans where appropriate including evaluation of the Zoning Code, the Critical Areas Ordinance, the Shoreline Master Program, the clearing and grading regulations, the landscaping regulations, best management practices for vegetation management and use of insecticides, herbicides and fungicides. The City of Des Moines shall amend these regulations, plans and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat, taking into consideration the model program developed by the Tri-County Salmon Conservation Coalition and the recommendations of shared strategy.
- (4) Require that development proposals contain measures to stabilize soils, hillsides, bluffs and ravine sidewalls and promote wildlife habitat by retaining critical areas of existing native vegetation.
- (5) Regulate development on bluffs and ravine sidewalls, and require a buffer of undisturbed native vegetation adjacent to them that is adequate in size to insure human safety, health and welfare and to restore and preserve other functions served by bluffs and ravines.



- (6) Restrict development proposals on potentially unstable land, such as areas with erosion, landslide, and seismic hazards, to insure safety and conformity with existing natural constraints.
- (7) Seek public acquisition of environmentally critical areas that have outstanding valuable natural functions and aesthetic assets.
- (8) Administer and enforce adopted land use regulations that protect environmentally critical areas from the impacts of adjacent land uses.
- (9) Require the issuance of a permit and review by the City prior to any construction activity that would occur in, be adjacent to, or would likely affect a critical area. A permit would be required because the functions and values of unique critical areas can be severely damaged by improper refuse dumping, clearing, grading, filling, and construction.
- (10) Using "best available science" (BAS), review and update development regulations pertaining to development in and protection of critical areas (the Critical Areas Ordinance), particularly those which directly or indirectly effect the health of the regions' anadromous fisheries, in the City of Des Moines, between five and ten years of the adopted ordinance date.
- (11) In designating and protecting critical areas the City shall include BAS, consistent with criteria set out in WAC 365-195-900 through 365-195-925.
- (12) BAS is information that (1) state or federal natural resource agencies have determined represents the best available science, (2) was derived from consultation with qualified scientific expert(s), as defined in WAC 365-195-905, or (3) was produced through a valid scientific process. A valid scientific process should have the following characteristics, as defined in WAC 365-195-905: peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references.
- (13) Where valid or complete scientific information is not available, the City shall take a precautionary or no risk approach, in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved (as stated in WAC 365-195-920). As an interim approach the City should take an effective adaptive management approach, where the results of land use decisions are scientifically evaluated as to their impacts on critical areas.
- (14) Strive to balance the City's goals of protecting environmentally critical areas with the other social, cultural, and economic goals of the City of Des Moines Comprehensive Plan.



- (15) Document, on the record, the use of BAS and instances when non-scientific information was used in-lieu-of BAS during the process of developing policies and regulations to protect critical areas and anadromous fisheries. Documentation should include the relevant sources of BAS. Documentation should also include information that departs from BAS and was used as a basis for critical areas policies and regulations.
- (16) The City should identify and document any non-scientific information (including legal, social, cultural, economic, and political), used as a basis for critical areas ordinance policies and regulations, that departs from recommendations derived from BAS. In these cases the City should provide a rationale for use of such information. The City should also identify potential risks to the functions and values of the critical areas at issue and any additional measures chosen to limit such risk.

**5-04-05** Require new development to contribute to the construction, renovation, or expansion of necessary public facilities. Support the establishment of late-comer agreements to ensure that adequate public facilities and utilities will be provided and equitably funded. Establish processes whereby impact fees can be collected for facility and utility improvements as permitted by State Law

**5-04-09** Require the undergrounding of utility lines as specified by the - DMMC to minimize public safety hazards, visual clutter, and the obstruction of views. Encourage the undergrounding of utilities throughout Des Moines. Encourage the use of shared corridors for several utilities

**6-03-01     Park Land Acquisition**

- (1) Develop and maintain procedures and priorities for the selection, classification and acquisition of park lands and the use of such lands for recreation purposes. All lands designated for recreation purposes shall be suitable for the intended recreation activity.
- (2) Work with other entities and public agencies to maximize opportunities for acquisition of land that qualifies for the City's park system through Interlocal agreements for "right-of-use", land transfers, lease, property exchange, dedication and surplus or easement land acquisition procedures.
- (3) Utilize the resources of national, regional and local conservation organizations, corporations, non-profit associations and benevolent entities to identify and acquire environmentally sensitive land, urban wildlife habitat or preservation areas.
- (4) Identify lands that enhance the appearance and character of the City. Such lands may serve as community or neighborhood separators, create gateway features into Des Moines, enhance the park system, or link existing natural or built amenities.

- (5) Preserve significant environmentally sensitive areas as passive open space. When appropriate, the City may construct improvements that enhance the public's awareness of, and appreciation for, natural areas.
- (6) Ensure that the quantity and quality of park land increases proportionately population growth, Des Moines should use a variety of means to provide recreational opportunities.

**6-03-06** The intent of park classifications and standards is to aid in identification of facility requirements and characteristics that respond to the various recreational needs of the City of Des Moines. Several factors are considered in connection with the classification and planning decisions. These are:

- (a) Determination of specific need in neighborhood or community setting.
- (b) Relationship of need, design criteria, service capability and suitability of a specific site to support the defined recreation service need.
- (c) The probability of school/park relations in terms of site development and facility use for public recreation purposes.
- (d) The probability of creating public/private partnerships on special use parks or in combination with a traditional public park.
- (e) Operational, maintenance and program service requirements for the population to be served by a particular park unit.

Classification of parks establishes several essential elements for park land requirements based on population ratios and the types of recreational uses and services to be provided. The physical improvements of a park should respond to the preferences or needs of citizens. The following park classifications for the City of Des Moines are modified from the National Recreation and Park Association to fit the needs of Des Moines. Refer to the City of Des Moines Parks, Recreation and Senior Services Master Plan for locations of parks.

**6-04-01** Conserve Open Space Land For Natural, Cultural & Recreation Values:

- (1) Coordinate and maintain procedures for conservation of open space through mechanisms such as zoning, donation, purchase of easements, conservation easements with coordinated planning, taxing and management actions.
- (2) Ensure that proposed land use and transportation facilities that would subject locally significant parks, golf courses, ball fields, outdoor spectator sports areas, amusements areas, riding stables, nature trails and wildlife refuges to exterior noise exposure levels which exceed limits identified in (chapter 18.38 DMMC) are opposed or include mitigation measures commensurate with the magnitude of adverse impact anticipated.



- (3) Where appropriate for recreation or open space purposes, transfer derelict land, easements, tax delinquent land, surplus roadway/highway rights-of-way, and other land not presently in productive use where such land can be used for land exchange, purchase or long-term leases.
- (4) Make maximum use of lands associated with surface water management and other public utilities to meet recreation needs.
- (5) Enforce regulations for new residential, business, commercial or industrial development and redevelopment which require either the dedication of park lands, provision of recreation facilities or payment of fees in-lieu of land to a park and recreation trust fund.
- (6) Work with conservation groups and the private sector to encourage donations or bargain sales of land through equitable incentives and to identify, acquire and conserve or manage natural open space areas and other recreational land.

**6-04-02** Encourage Joint Use of Existing Physical Resources:

- (1) Where appropriate, establish joint use recreational facilities while ensuring recreation services to the entire community. Utilize school sites and public buildings for recreation and service programs through establishing joint purchase and/or use agreements.
- (2) Develop specific agreements and reciprocal no fee policies which encourage park use by school groups and school use by recreation user groups of all ages.
- (3) Encourage joint-use for recreation wherever lands and facilities are suitable and committed to other private and public purposes, including City, county/state properties, utilities rights-of-way, and the property of institutions and private corporations

**7-03-05** Promote compliance with the Land Use Element's residential policies regarding density, population, housing mix, locational criteria, etc.

**7-03-06** Promote compatible residential development that is affordable to all economic segments of the Des Moines community. Ensure City codes and development regulations do not create unnecessary barriers to affordable housing.

**7-03-07** In order to protect new dwellings from existing noise impacts associated with STIA, ensure that new residential construction includes Sound Transmission Control Requirements.



**7-04-16** Continue to allow planned unit developments as provided by the DMMC. Consider textual code amendments that would allow administrative approval of final development plans, and reduce or eliminate minimum site area requirements

# David I. Hamlin & Associates

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283 (206) 285-9035  
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May 12, 1998

Granville Southern Corporation  
P.O. Box 2878  
Kirkland, WA. 98083-2878

ATTN: Mike Reid

**Subject: Revised Traffic Impact Analysis for Pacific Place  
with New Access Through Choi Parcel**

Dear Mike:

The purpose of this letter is to respond to the County's and your request for an analysis of the use of the Choi parcel for access to Pacific Place. The analysis will review an extension of 15th Avenue South to the north to S. 279th Street through Pacific Place and the Choi property. This access revision would eliminate the previously proposed access to SR-99. The analysis also summarizes potential cut-through traffic using the new route. The following summarizes our findings.

## 1) Background

The traffic impact analysis for the proposed development of Pacific Place reviewed the development of 11.1 acres into 100 owner-occupied units. The development of Pacific Place is expected to generate 586 new trips per day, 55 of which will occur during the PM peak hour. Access to the development was proposed from SR-99 (right-in/right-out) and from an extension of an existing dead-end street, 15th Avenue South, which abuts the south property line and serves the Applewood plat.

Recommended mitigation for the project for the impacts from the development included a contribution to the County's current MPS fee schedule to fund the development's share of off-site road and intersection improvements, a pro-rata share for improvements to the intersection of SR-99/16th Avenue South if/when WSDOT proceeds with the intersection improvements, and the installation of right-turn storage along SR-99 at the site access.

Comments from both WSDOT and the adjacent jurisdictions



(Federal Way and Des Moines) expressed concern over the access to SR-99 and its connection to the local access streets.

## 2) Revised Access Through Choi Property

The acquisition of the Choi parcel located immediately to the north of Pacific Place, and extending to S. 279th Street, would allow for an alternative access to Pacific Place from S. 279th Street. S. 279th Street is a local access street which serves a limited number of single-family residences. The street has not been upgraded to an urban standard, i.e., no curb, gutter, or sidewalk has been installed.

The construction of this access to serve Pacific Place would eliminate the construction of an access to SR-99 and the impacts along the highway associated with the access. The use of an access to S. 279th Street would provide an alternative means of access to the site to and from the north. In order to better assess the impacts that this new access alternative may have on the intersections in the immediate vicinity, additional AM and PM peak hour counts have been obtained and are shown on Figures 2B and 2C. These volumes will be used in estimating the potential cut-through traffic on this new connection.

The specific changes in the AM and PM peak hour trip assignment resulting from this access alternative have been shown in the attached revisions to Figures 4 and 5. The major change in the assignment would be the routing of northbound trips to S. 279th Street and through the intersection of S. 279th Street/16th Avenue South rather than to the south through the intersection of S. 288th Street/SR-99 (due to the turn restriction which would have been imposed on the access to SR-99). This also results in fewer trips traveling along SR-99 between S. 272nd Street and S. 288th Street, and more trips traveling along 16th Avenue South between S. 279th Street and S. 272nd Street. It is expected that some of the inbound trips to the project would continue to use SR-99 southbound to access S. 279th Street since a southbound right-turn from SR-99 across 16th Avenue South to S. 279th Street is allowed. The access alternative would also result in a change in the turning movement assignments at the intersection of S. 272nd Street/SR-99, although the total number of trips would not change. These revised intersection turning movements have been shown on Figures 7 and 7A. Additionally, the peak hour volumes at the intersections in the immediate vicinity shown in Figures 2B and 2C have been estimated for the year 2002, with and without the project, and are shown in Figures 6B, 6C, 7B, and 7C.

The level of service analyses for the "with project"



conditions have been revised to reflect the new trip assignments. It should be noted that as a result of the new access to S. 279th Street, most of the site trips will travel between 16th Avenue South and S. 279th Street, rather than on the north and south legs of SR-99 at its intersection with 16th Avenue South. The results of the revised level of service analyses are shown in the tables which follow.

TABLE 5 (REVISED)  
2002 LEVELS OF SERVICE  
UNSIGNALIZED INTERSECTION

| Location                 | Peak<br>Hour | Base Condition         | Level of Service (Delay)            |                                       |
|--------------------------|--------------|------------------------|-------------------------------------|---------------------------------------|
|                          |              |                        | W/Project<br>(Original<br>Analysis) | W/Project<br>(New Trip<br>Assignment) |
| SR-99/<br>16th Avenue S. | AM           | EBRT - A ( 5 sec.)     | A ( 5 sec.)                         | A ( 5 sec.)                           |
|                          |              | NBLT - B ( 9 sec.)     | B ( 9 sec.)                         | B ( 9 sec.)                           |
|                          |              | OVERALL - A ( 2 sec.)  | A ( 2 sec.)                         | A ( 2 sec.)                           |
|                          | PM           | EBRT*- F (551 sec.)    | F (602 sec.)                        | F (577 sec.)                          |
|                          |              | NBLT - F ( ** )        | F ( ** )                            | F ( ** )                              |
|                          |              | OVERALL - F (119 sec.) | F (131 sec.)                        | F (126 sec.)                          |

\* - Critical gap for subject movement adjusted downward by one second to account for acceleration lane.

\*\* - Calculated delay greater than 999.9 seconds.

Where:

| LOS | Delay              |
|-----|--------------------|
| A   | ≤ 5 seconds        |
| B   | > 5 & ≤ 10 seconds |
| C   | >10 & ≤ 20 seconds |
| D   | >20 & ≤ 30 seconds |
| E   | >30 & ≤ 45 seconds |
| F   | >45 seconds        |

TABLE 6 (REVISED)  
2002 LEVELS OF SERVICE  
SIGNALIZED INTERSECTION

| Location                  | Peak Hour | Base Condition         | Level of Service (Delay)      |                                 |
|---------------------------|-----------|------------------------|-------------------------------|---------------------------------|
|                           |           |                        | W/Project (Original Analysis) | W/Project (New Trip Assignment) |
| SR-99/<br>S. 272nd Street | AM        | EB - D ( 37 sec.)      | D ( 37 sec.)                  | D ( 38 sec.)                    |
|                           |           | WB - D ( 36 sec.)      | D ( 36 sec.)                  | D ( 36 sec.)                    |
|                           |           | NB - D ( 33 sec.)      | D ( 35 sec.)                  | D ( 33 sec.)                    |
|                           |           | SB - C ( 16 sec.)      | C ( 16 sec.)                  | C ( 16 sec.)                    |
|                           |           | OVERALL - D ( 32 sec.) | D ( 33 sec.)                  | D ( 32 sec.)                    |
|                           | PM        | EB - E ( 52 sec.)      | E ( 52 sec.)                  | E ( 53 sec.)                    |
|                           |           | WB - E ( 52 sec.)      | E ( 55 sec.)                  | E ( 55 sec.)                    |
|                           |           | NB - D ( 29 sec.)      | D ( 29 sec.)                  | D ( 29 sec.)                    |
|                           |           | SB - E ( 49 sec.)      | E ( 51 sec.)                  | E ( 51 sec.)                    |
|                           |           | OVERALL - E ( 45 sec.) | E ( 47 sec.)                  | E ( 47 sec.)                    |

Where:

| LOS | Delay              |
|-----|--------------------|
| A   | ≤ 5 seconds        |
| B   | > 5 & ≤ 15 seconds |
| C   | >15 & ≤ 25 seconds |
| D   | >25 & ≤ 40 seconds |
| E   | >40 & ≤ 60 seconds |
| F   | >60 seconds        |

The results of the revised level of service analyses indicate that the new access proposal will result in a slightly better level of service at the two intersections previously reviewed as a result of fewer trips through SR-99/16th Avenue South and fewer trips impacting the critical movements at S. 272nd Street/SR-99.

### 3) Potential Cut-Through Traffic

As noted in the original analysis, the extension of 15th Avenue South to tie into the existing street system would provide a secondary access not only to the residents of the proposed development, but would also serve the existing residents of the area by providing them with an alternative to using S. 288th Street/16th Avenue South when accessing the neighborhood. Emergency service vehicles would also be able to enter the neighborhood (from the north) via a much shorter route.

Figures 8 and 9 of the original report have been revised to



reflect the new access location and expected volumes on 15th Avenue South at three different locations along the route, i.e., just south of S. 279th Street, at the south property line of Pacific Place, and just north of S. 284th Street. These figures show the total estimated trips and the source of these trips, i.e., development trips, Applewood trips, or trips diverted from the surrounding neighborhood. The Applewood trips and diverted trips were estimated from the volumes shown on Figures 7B and 7C. It was assumed that the Applewood and diverted trips using the new connection would be at the same ratio as those neighborhood trips destined to and from the north at the intersection of S. 288th Street/SR-99, and that there would be a 100% diversion of these trips at the intersection of S. 284th Street/15th Avenue South. (Trips destined to and from the east or south were assumed to continue in their current pattern.) Currently, 66% of the outbound trips and 36% of the inbound trips from the neighborhood in the AM peak hour are destined to and from the north, with 45% outbound and 44% inbound during the PM peak hour. These percentages were applied to the peak hour volumes at the intersection of S. 284th Street/15th Avenue South to estimate the diversion onto 15th Avenue South via S. 279th Street. It is probable that not all of the trips noted as diverted would use this new route, but the 100% diversion has been shown to represent a worst case scenario. The figures show that if the diversions occur as projected, the highest volumes along 15th Avenue South would occur just south of S. 279th Street, where just under 1000 vehicles per day could be expected. (ADT based on a 9.55 to 1.01 ratio of daily to PM peak hour trips.) Further to the south (at the project south property line and near S. 284th Street), approximately 700 to 800 vehicles per day have been estimated. These values fall within the County's recommended maximum daily volumes of 1000 vehicles per day on sub-collectors.

A level of service calculation has been performed for the S. 279th Street access and the intersection of S. 284th Street/15th Avenue South to ensure that the diversion of the neighborhood trips does not create a level of service problem. The results of the level of service analyses are as follows:



TABLE 7 (REVISED)  
2002 LEVELS OF SERVICE - SITE ACCESSSES

| <u>Location</u>                      | <u>Peak Hour</u> | <u>Level of Service (Delay)</u> |
|--------------------------------------|------------------|---------------------------------|
| S. 279th Street<br>15th Avenue South | AM               | WBLT - A ( 2 sec.)              |
|                                      |                  | NB - A ( 3 sec.)                |
|                                      |                  | OVERALL - A ( 2 sec.)           |
|                                      | PM               | WBLT - A ( 2 sec.)              |
|                                      |                  | NB - A ( 3 sec.)                |
|                                      |                  | OVERALL - A ( 2 sec.)           |
| S. 284th Street<br>15th Avenue South | AM               | EBLT - A ( 2 sec.)              |
|                                      |                  | WBLT - A ( 2 sec.)              |
|                                      |                  | NB - A ( 4 sec.)                |
|                                      |                  | SB - A ( 4 sec.)                |
|                                      |                  | OVERALL - A ( 2 sec.)           |
|                                      | PM               | EBLT - A ( 2 sec.)              |
|                                      |                  | WBLT - A ( 2 sec.)              |
|                                      |                  | NB - A ( 3 sec.)                |
|                                      |                  | SB - A ( 3 sec.)                |
|                                      |                  | OVERALL - A ( 2 sec.)           |

The analyses indicate that the accesses to the site would operate at good levels of service.

#### 4) Other Impacts

The development of an access to S. 279th Street appears as though it will provide a better alternative than the access previously proposed from SR-99. However, the creation of the access to S. 279th Street will result in more trips through the intersection of S. 279th Street/16th Avenue South which also lies contiguous to the intersection of 16th Avenue South/SR-99. Volumes on S. 279th Street are currently very light, with heavier traffic on 16th Avenue South which is typically traveling to or from SR-99. The intersection of S. 279th Street/16th Avenue South has a very odd configuration. Islands have been installed to channelize the traffic and restrict some movements, and stop signs control the southbound, eastbound, and westbound (right-turn from SR-99) movements, while the northbound left-turn from SR-99 onto 16th Avenue South is an uncontrolled movement.

The existing and future estimated volumes through this intersection have been shown on Figures 2B, 2C, 6B, 6C, 7B, 7C, 10, and 11. The extension of 15th Avenue South to S. 279th Street would allow the residents of Pacific Place,

along with existing residents to the south, to access 16th Avenue South via the local street system, rather than using SR-99.

Level of service calculations have been conducted for the intersection of S. 279th Street/16th Avenue South for the existing and future conditions. The intersection has been reviewed as a four-way intersection separate from SR-99/16th Avenue South. The northbound left-turn movement from SR-99 has been analyzed as the northbound through and left-turn at S. 279th Street. The southbound right-turn movement from SR-99 is reviewed as a westbound through and right-turn movement. The southbound movement allows only through and right-turn movements and the eastbound movement allows only left and right-turns. The intersection was analyzed as a two-way stop controlled intersection with the north-south movements as free-flowing, since it is not possible to accurately analyze the current stop control on three of the four legs. If anything, the two-way stop control analysis would result in a worse level of service for the east and west movements than actually occurs since southbound traffic currently is controlled. The results of these analyses are as follows:

**LEVEL of SERVICE ANALYSIS**  
**S. 279TH STREET/16TH AVENUE SOUTH**

| <u>Condition</u>                          | <u>Peak Hour</u> | <u>Level of Service (Delay)</u> |
|-------------------------------------------|------------------|---------------------------------|
| Existing                                  | AM               | EB - B ( 6 sec.)                |
|                                           |                  | WB - A ( 5 sec.)                |
|                                           |                  | NBLT - A ( 2 sec.)              |
|                                           |                  | OVERALL - A (<1 sec.)           |
|                                           | PM               | EB - B ( 6 sec.)                |
|                                           |                  | WB - A ( 4 sec.)                |
|                                           |                  | NBLT - A ( 3 sec.)              |
|                                           |                  | OVERALL - A (<1 sec.)           |
| 2002 w/out Project                        | AM               | EB - B ( 6 sec.)                |
|                                           |                  | WB - A ( 5 sec.)                |
|                                           |                  | NBLT - A ( 2 sec.)              |
|                                           |                  | OVERALL - A (<1 sec.)           |
|                                           | PM               | EB - B ( 7 sec.)                |
|                                           |                  | WB - A ( 5 sec.)                |
|                                           |                  | NBLT - A ( 3 sec.)              |
|                                           |                  | OVERALL - A (<1 sec.)           |
| 2002 with Project<br>(no diverted trips)  | AM               | EB - B ( 8 sec.)                |
|                                           |                  | WB - B ( 5 sec.)                |
|                                           |                  | NBLT - A ( 2 sec.)              |
|                                           |                  | OVERALL - A ( 1 sec.)           |
|                                           | PM               | EB - B ( 8 sec.)                |
|                                           |                  | WB - B ( 6 sec.)                |
|                                           |                  | NBLT - A ( 3 sec.)              |
|                                           |                  | OVERALL - A (<1 sec.)           |
| 2002 with Project<br>(and diverted trips) | AM               | EB - C (14 sec.)                |
|                                           |                  | WB - B ( 5 sec.)                |
|                                           |                  | NBLT - A ( 2 sec.)              |
|                                           |                  | OVERALL - A ( 3 sec.)           |
|                                           | PM               | EB - C (11 sec.)                |
|                                           |                  | WB - B ( 7 sec.)                |
|                                           |                  | NBLT - A ( 3 sec.)              |
|                                           |                  | OVERALL - A ( 1 sec.)           |

The results of the above analyses indicate that the intersection of S. 279th Street/16th Avenue South, when analyzed as an isolated intersection, would operate at a good



level of service. While the analysis does not take into account that the intersection lies contiguous to another intersection , it does provide a relative level of its operation. Even with the inclusion of the diverted trips, the intersection should still operate adequately.

#### 5) Conclusions

The current proposal of providing secondary access to Pacific Place via S. 279th Street and the Choi property appears to be preferable to providing access from SR-99. The current proposal would be less visible to the motoring public and therefore potentially less likely to be used for cut-through traffic than if it were located along SR-99. Furthermore, the deletion of an access to SR-99 eliminates any need for a permit from WSDOT and their concerns with granting access to SR-99. As we have stated before, the only means of eliminating any possibility of cut-through traffic is by not connecting 15th Avenue South to any other street. However, if it is the intent of the County to provide neighborhood circulation, then the current proposal provides a better alternative to the one previously proposed since the new access will connect to a local street rather than a State highway.

The construction of this access to the internal neighborhood street system would provide a secondary access not only to the residents of the proposed development, but also to the existing residents of the neighborhood and emergency vehicles. This would reduce not only the number of project trips through the intersection of S. 288th Street/SR-99, but also any diverted trips from this same intersection which currently operates at a fairly low level of service. The intersection of SR-99/16th Avenue South would also be impacted by fewer trips.

The reduction of trips through the intersections along SR-99 would conversely result in an increase in trips through the intersection of S. 279th Street/16th Avenue South. While our calculations indicate this intersection could handle the additional trips, we also acknowledge that since this intersection is contiguous to SR-99, its operation is affected by traffic on SR-99 and has some inherent limitations. Ultimately, a re-design of the two intersections is desirable.

We trust that the above information has sufficiently addressed the County's questions at the present time. After you have had a chance to review the information contained herein, I would recommend that we meet again with the County Staff to further discuss the impacts associated with the access proposal. Please give me a call if you have any questions.

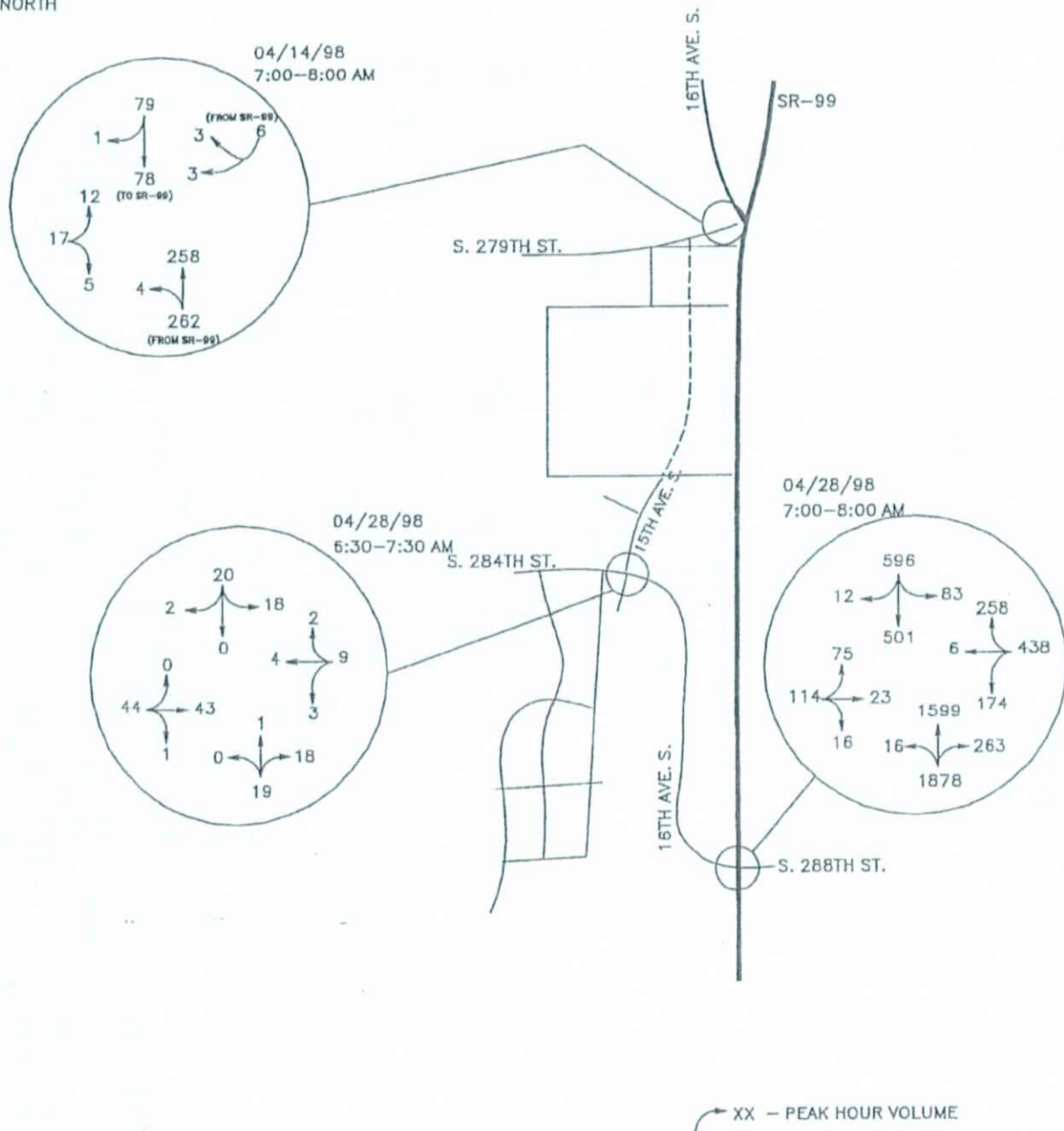
Sincerely,

A handwritten signature in cursive script, appearing to read "Geri Reinart".

Geri Reinart, P.E.  
David I. Hamlin and Associates

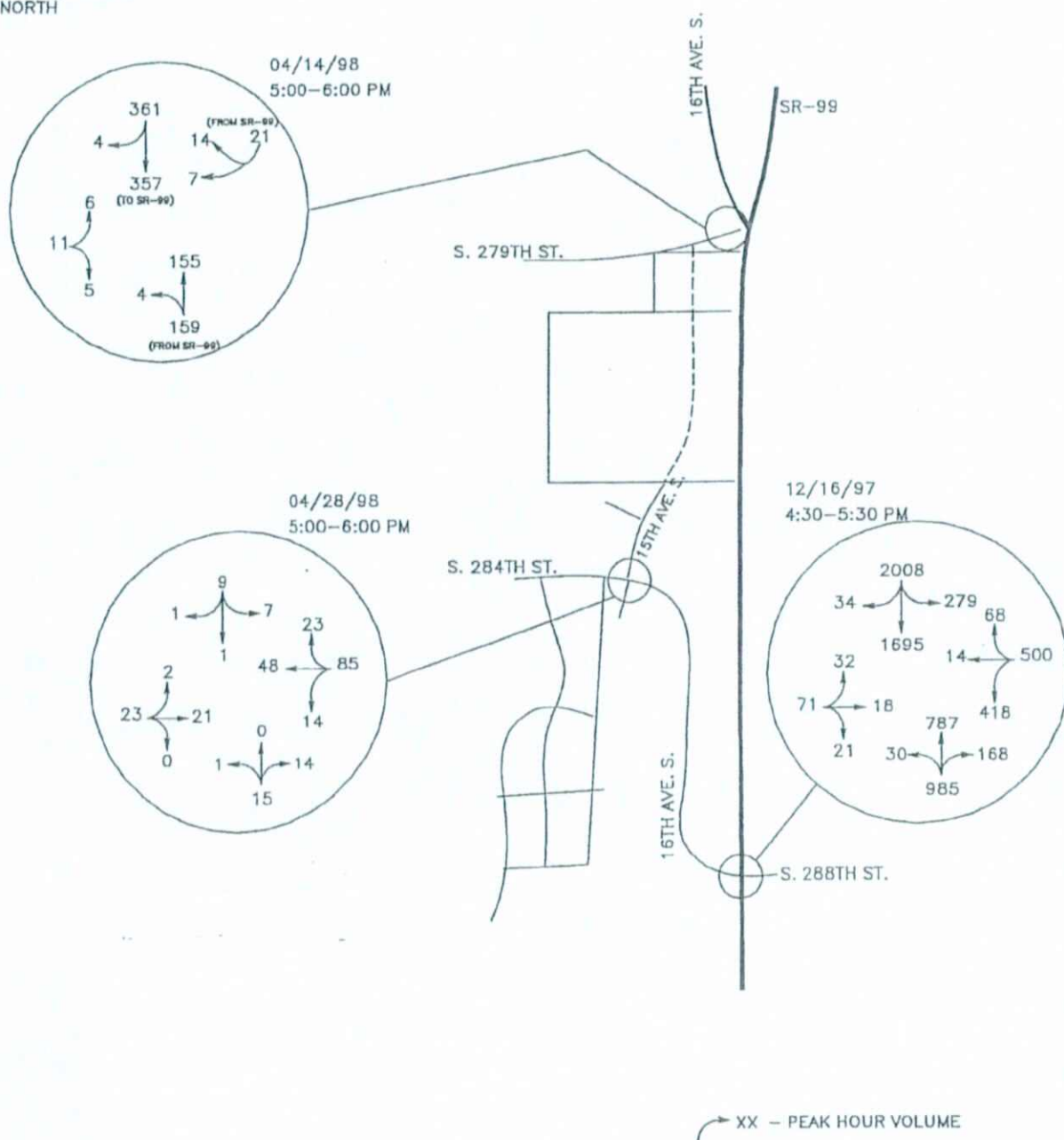
cc: Gary Samek, King County  
Aileen McManus, King County

Attachments



EXISTING AM PEAK HOUR VOLUMES  
FIGURE 2B





## EXISTING PM PEAK HOUR VOLUMES

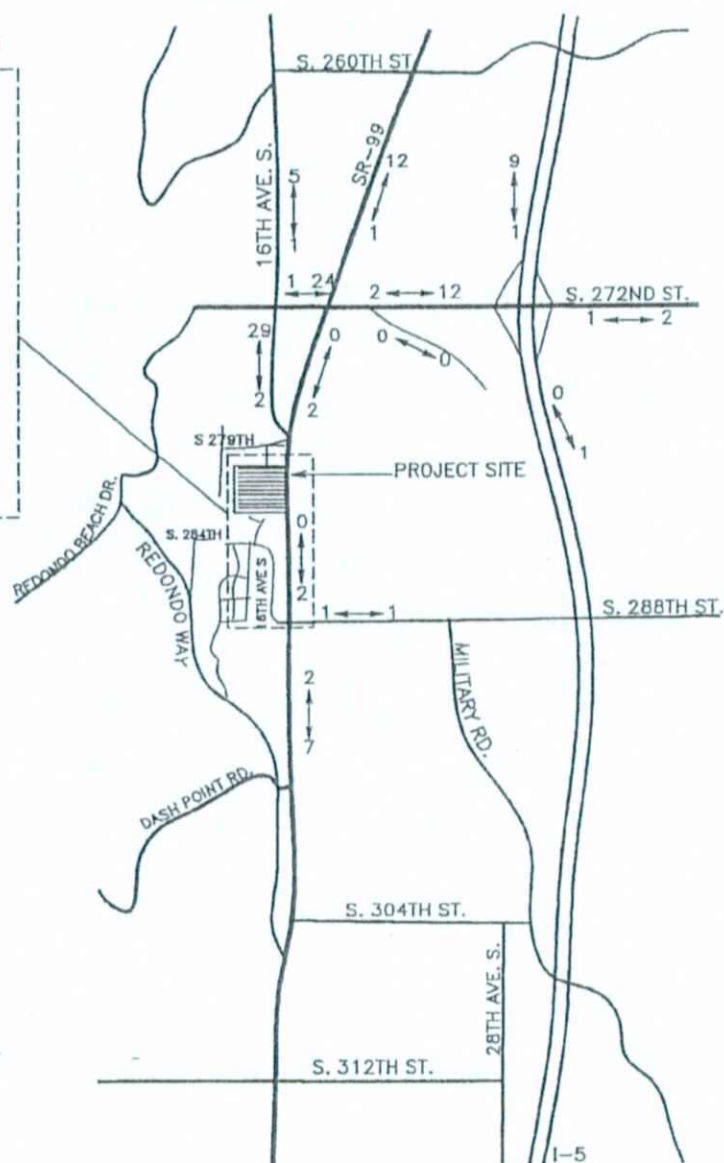
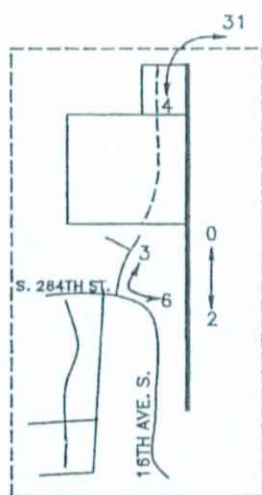
FIGURE 2C

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PACIFIC PLACE

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05/07/98

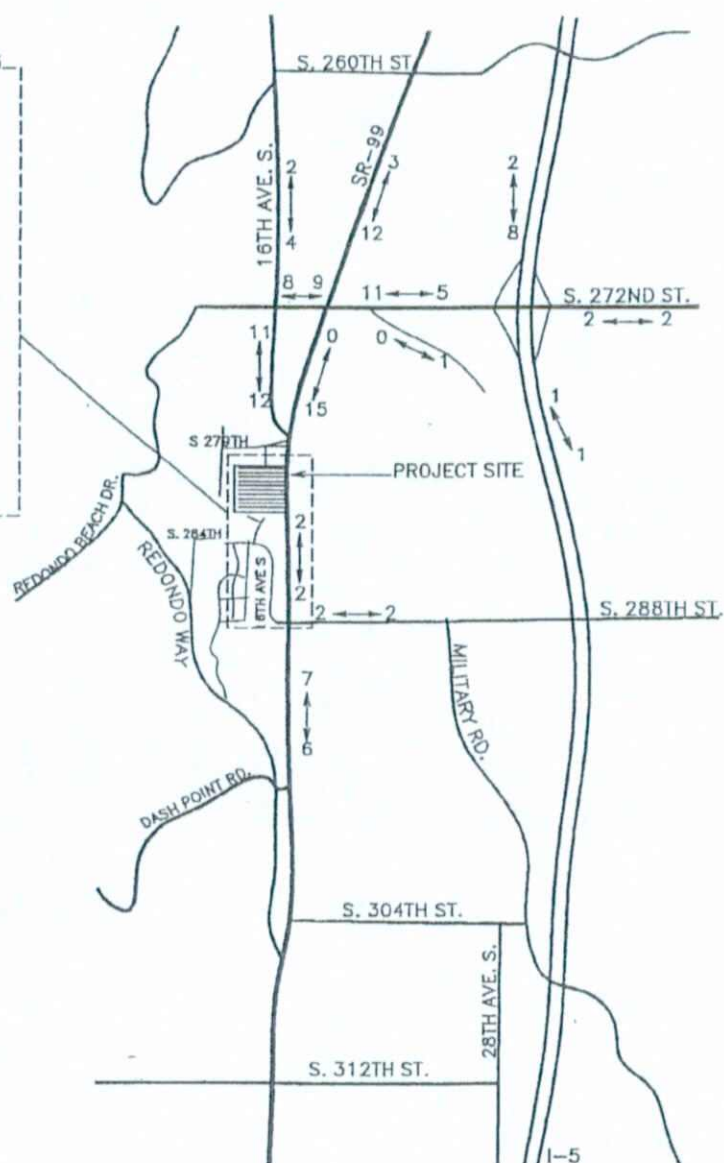
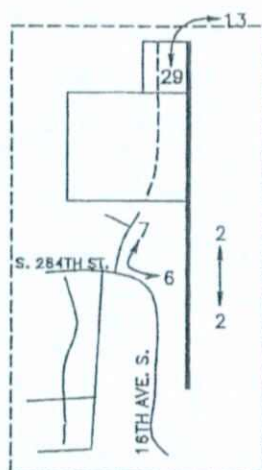


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ESTIMATED PM PEAK HOUR TRIP ASSIGNMENT

FIGURE 5

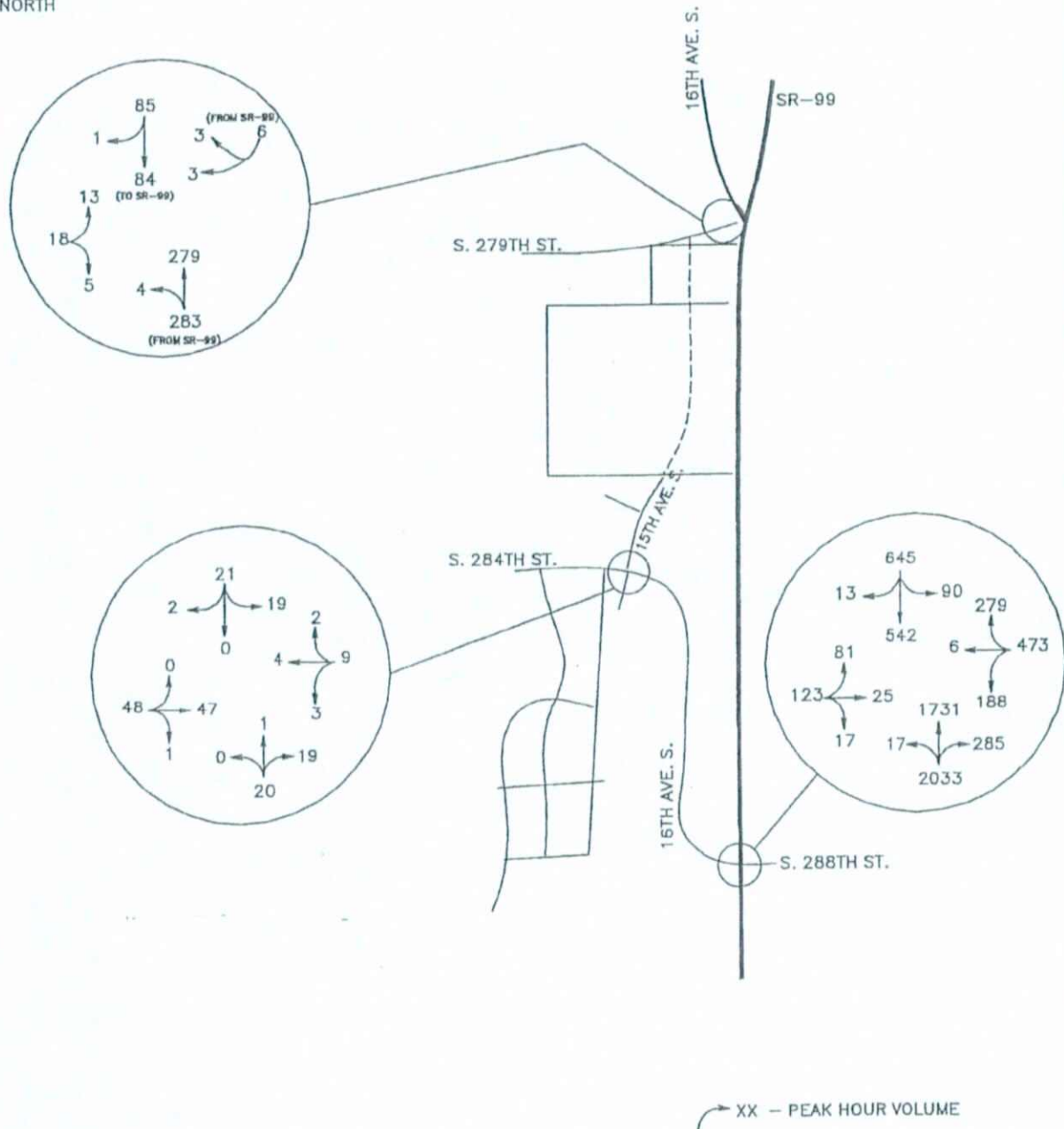
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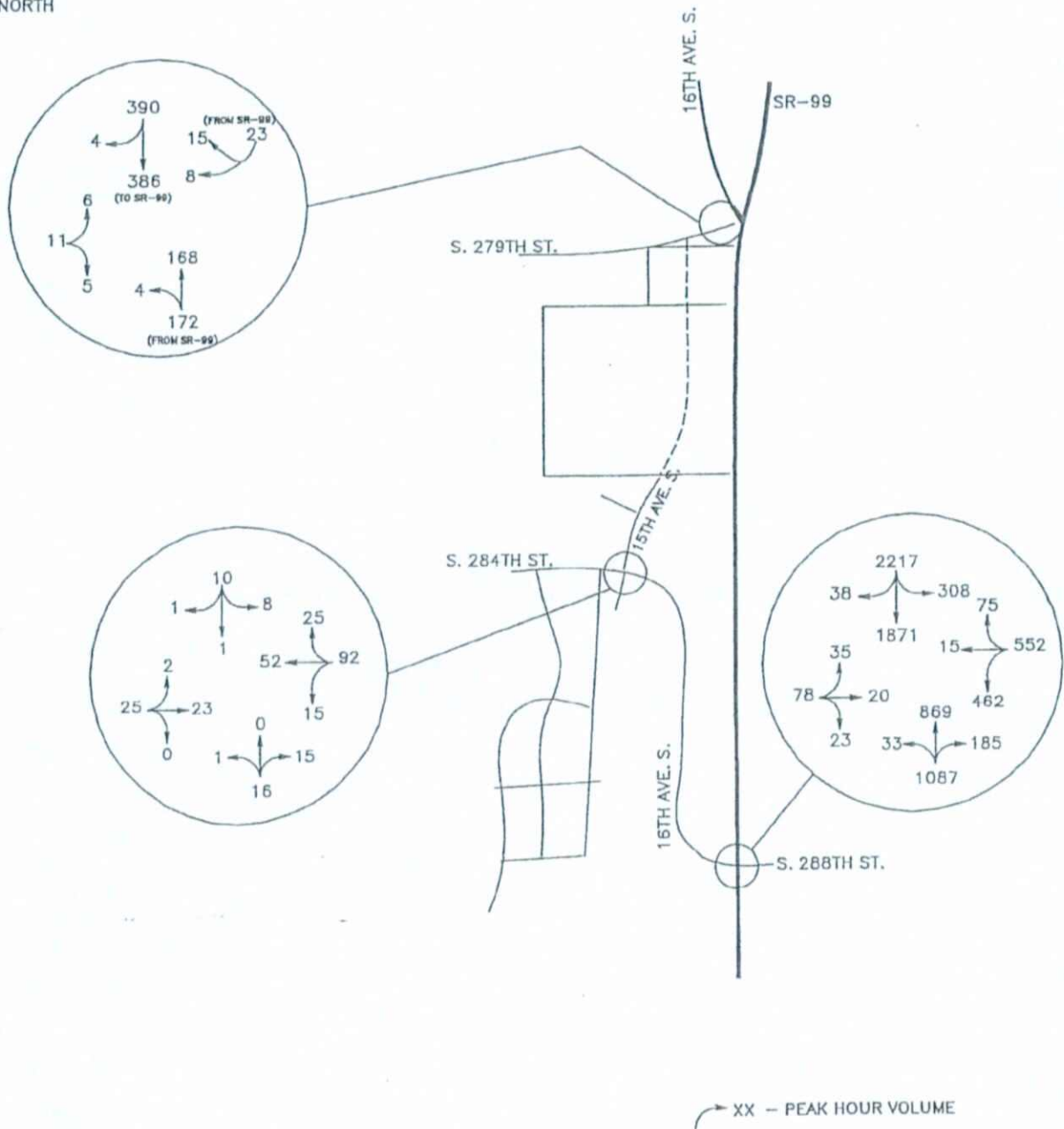
REV.

05/07/98



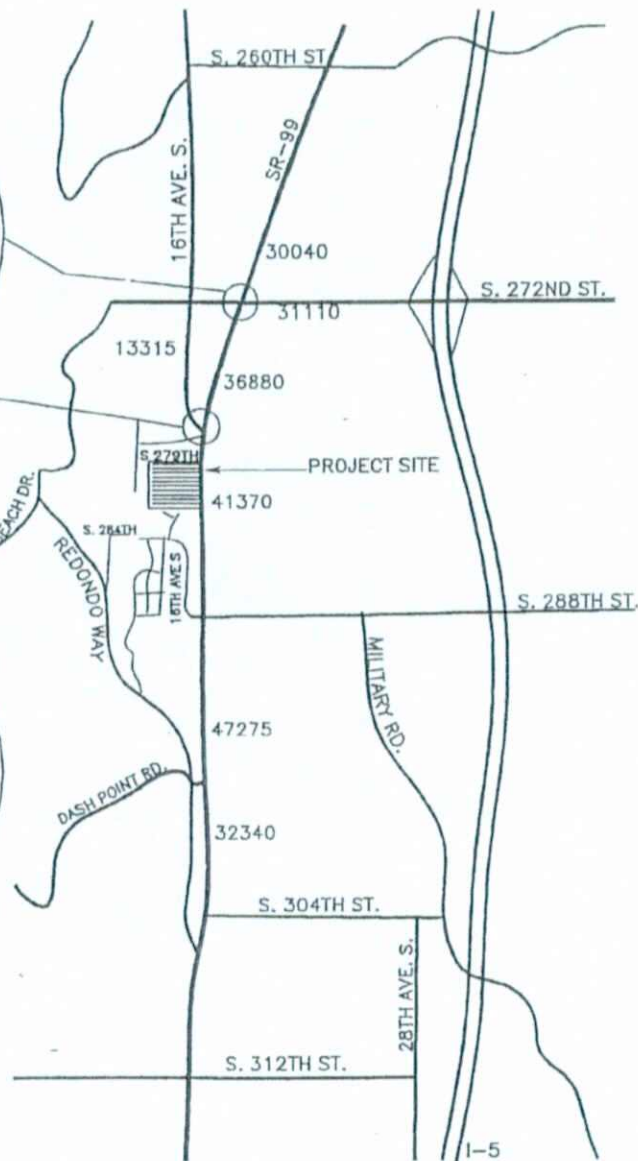
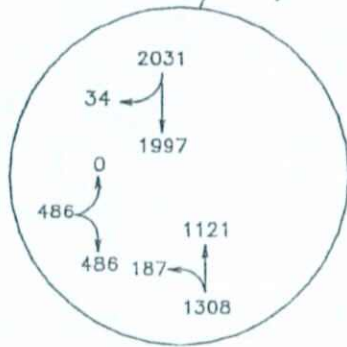
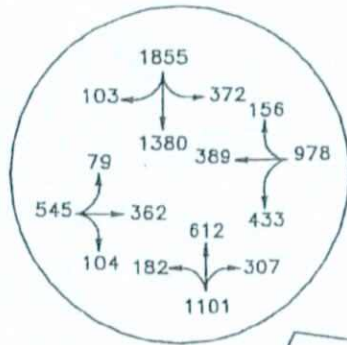


2002 ESTIMATED AM PEAK HOUR VOLUMES  
(WITHOUT PROJECT)  
FIGURE 6B



2002 ESTIMATED PM PEAK HOUR VOLUMES  
(WITHOUT PROJECT)

FIGURE 6C

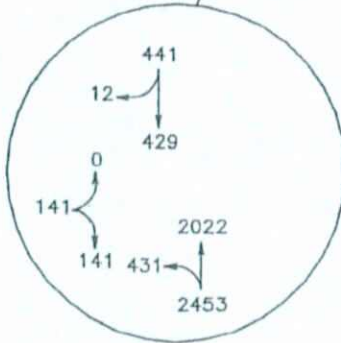
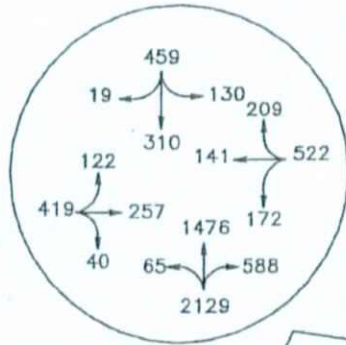


XXXX - 2002 DAILY VOLUME  
→ XX - PEAK HOUR VOLUME

## 2002 ESTIMATED DAILY & PM PEAK HOUR VOLUMES (WITH PROJECT)

FIGURE 7

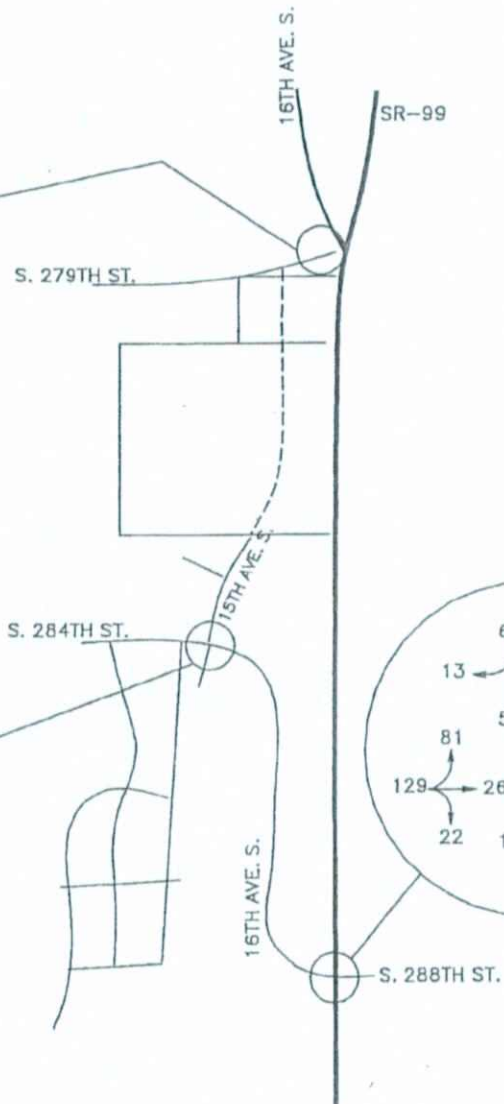
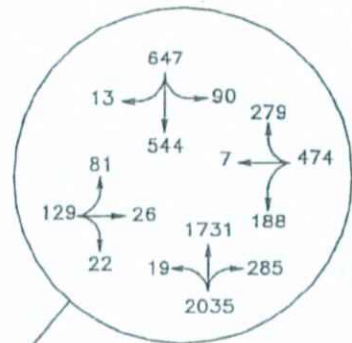
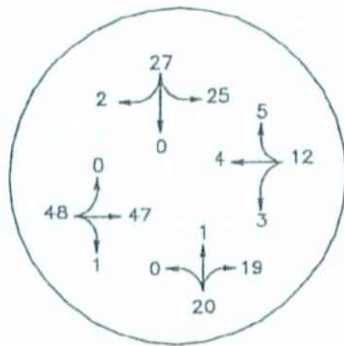
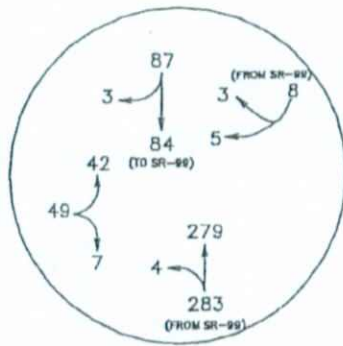




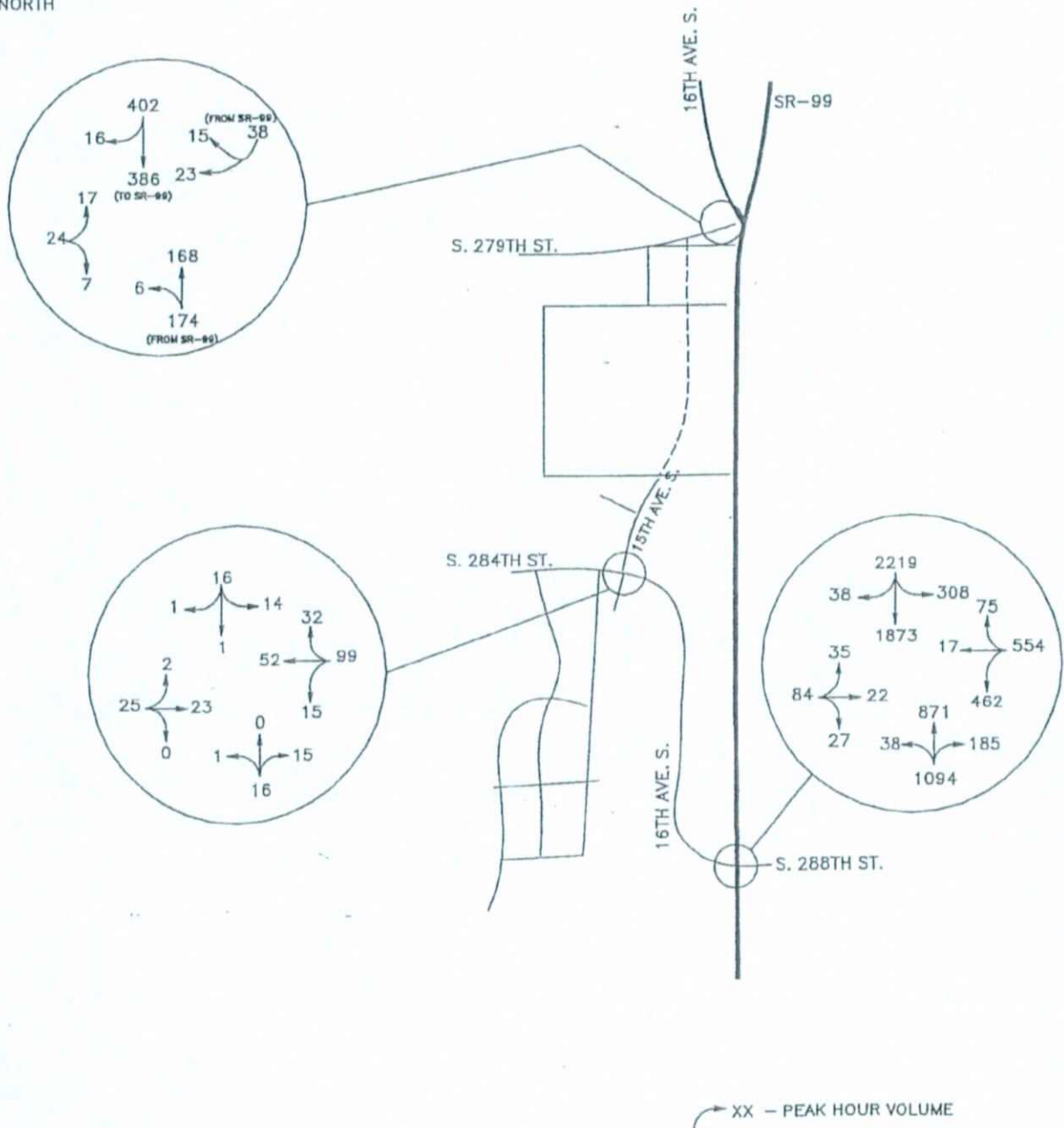
XX - PEAK HOUR VOLUME

# 2002 ESTIMATED AM PEAK HOUR VOLUMES (WITH PROJECT)

FIGURE 7A



2002 ESTIMATED AM PEAK HOUR VOLUMES  
(WITH PROJECT)  
FIGURE 7B



2002 ESTIMATED PM PEAK HOUR VOLUMES  
(WITH PROJECT)

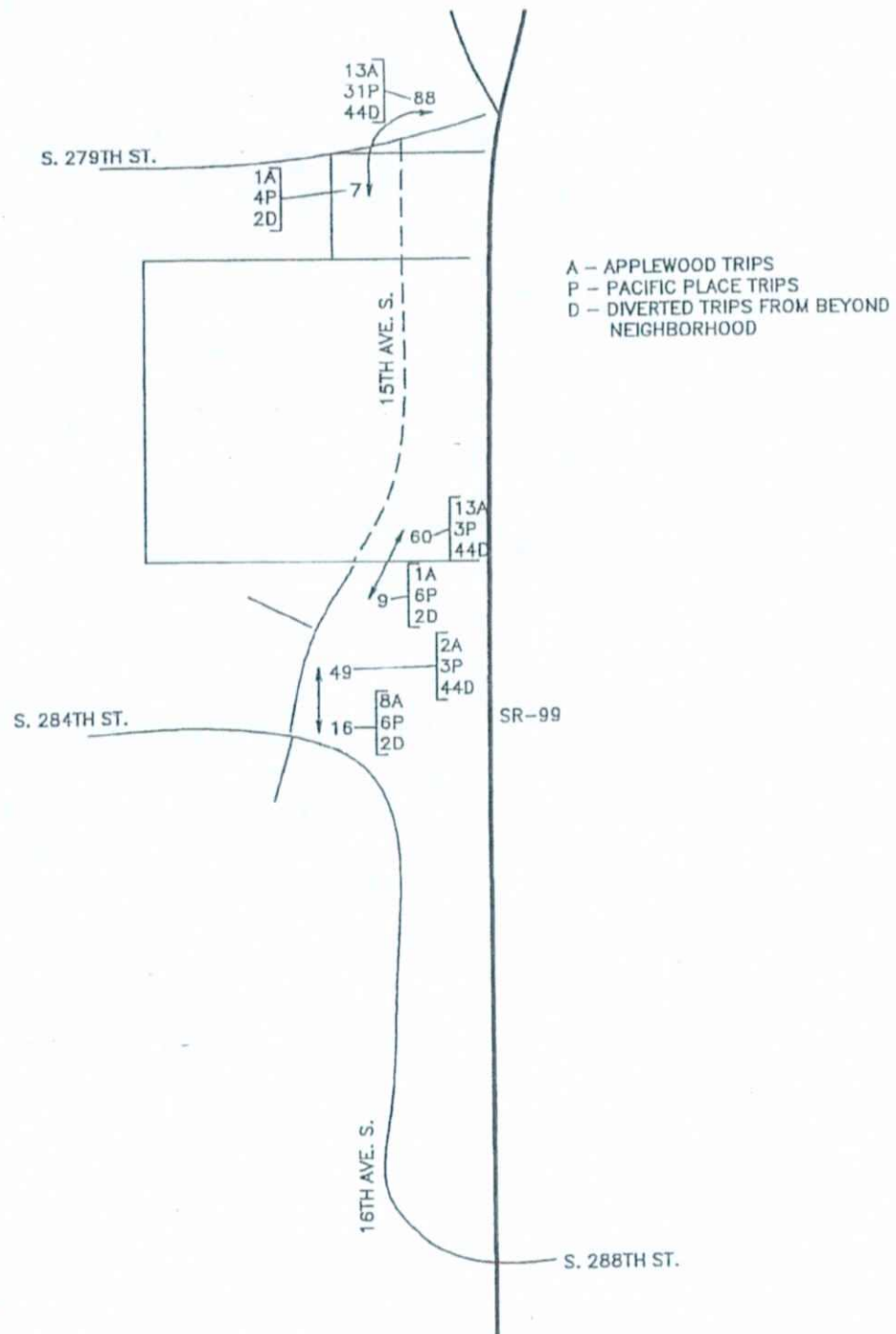
FIGURE 7C

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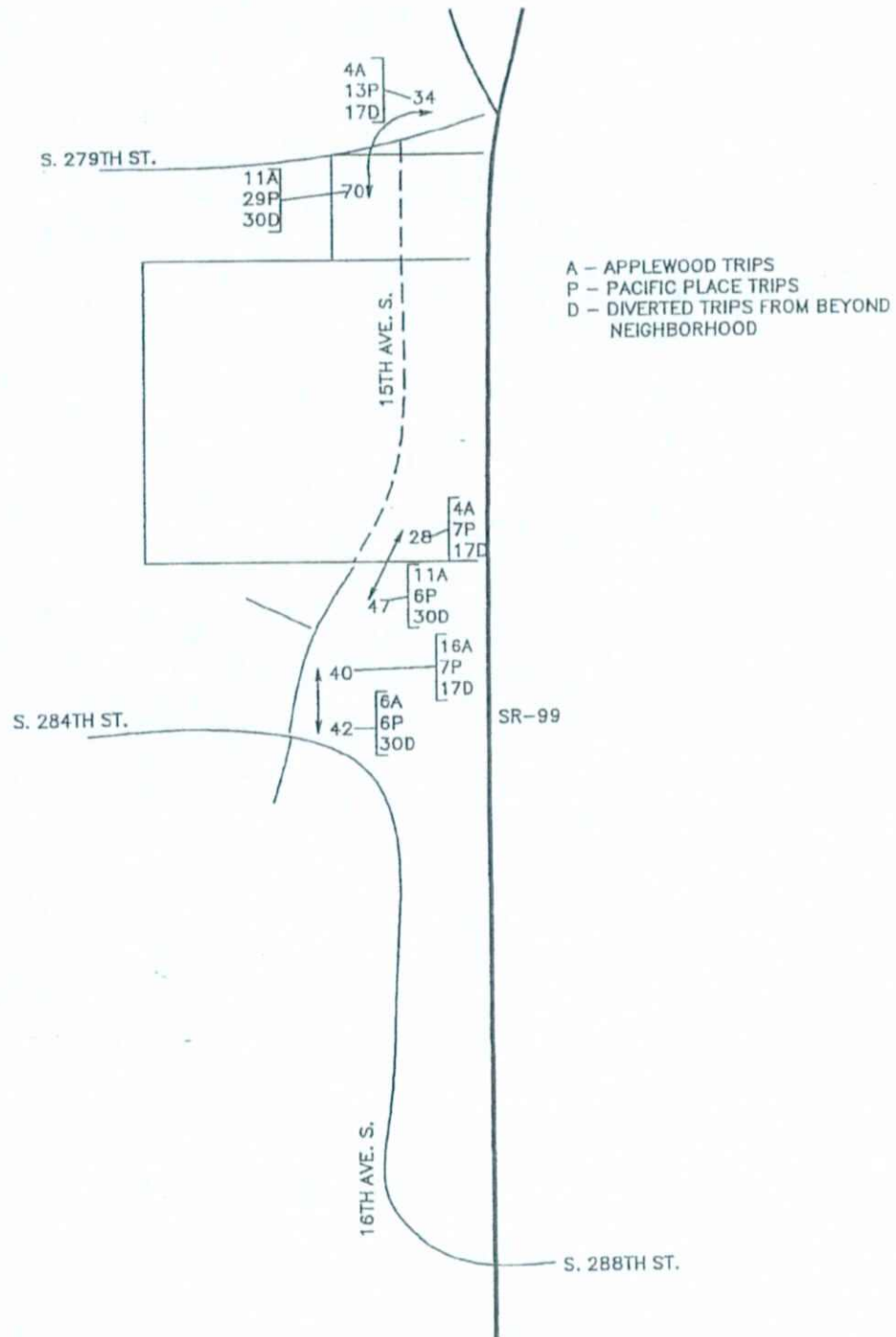
PACIFIC PLACE

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05/07/98

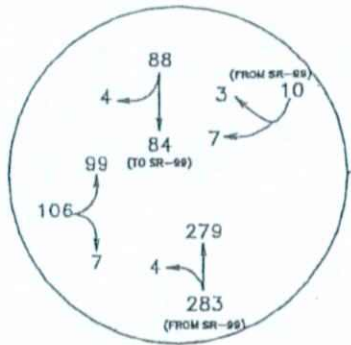




ESTIMATED AM PEAK HOUR NEIGHBORHOOD TRIPS  
NEW & DIVERTED  
FIGURE 8



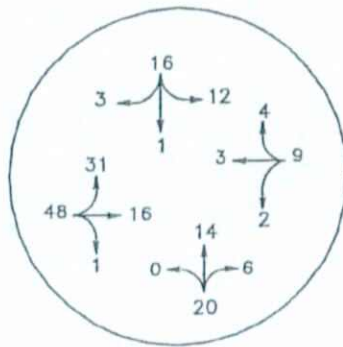
ESTIMATED PM PEAK HOUR NEIGHBORHOOD TRIPS  
NEW & DIVERTED  
FIGURE 9



S. 279TH ST.

16TH AVE. S.

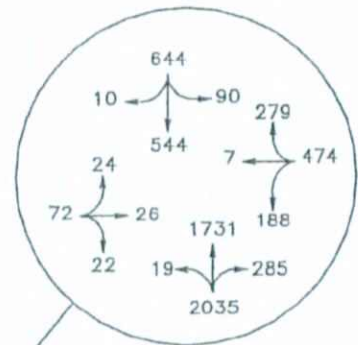
SR-99



S. 284TH ST.

15TH AVE. S.

16TH AVE. S.



S. 288TH ST.

XX - PEAK HOUR VOLUME

2002 ESTIMATED AM PEAK HOUR VOLUMES  
(WITH PROJECT & DIVERTED TRIPS)

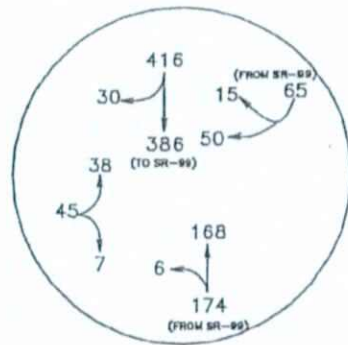
FIGURE 10

DAVID I. HAMLIN & ASSOCIATES

PACIFIC PLACE

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05/07/98

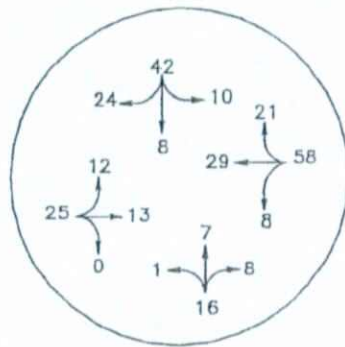




S. 279TH ST.

16TH AVE. S.

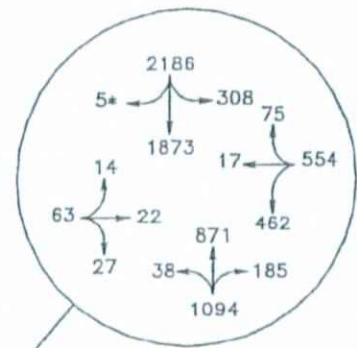
SR-99



S. 284TH ST.

15TH AVE. S.

16TH AVE. S.



S. 288TH ST.

\* - TOKEN VOLUME; SUBTRACTION OF DIVERTED TRIPS EQUALED AN AMOUNT LESS THAN 0.

XX - PEAK HOUR VOLUME

## 2002 ESTIMATED PM PEAK HOUR VOLUMES (WITH PROJECT & DIVERTED TRIPS)

FIGURE 11

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(206) 285-9035  
FAX 285-6345

February 23, 1998

Granville Southern Corporation  
P.O. Box 2878  
Kirkland, WA. 98083

ATTN: Mike Reid

**Subject: Pacific Place - Analysis of S. 288th Street/SR-99  
Intersection Per City of Federal Way Request**

Dear Mike:

Per your request, we have analyzed the intersection of S. 288th Street/SR-99. The City of Federal Way had indicated in their comments on Pacific Place that this intersection should have been included in the traffic impact analysis submitted to King County (even though no inter-local agreement exists between the two agencies and therefore no analysis was required by the County).

A PM peak hour turning movement count has been acquired at the intersection for use in the analysis. Figures 2, 6, and 7 of the traffic impact analysis have been revised to include the intersection volumes and have been attached. The following table summarizes the results of our analysis of the intersection.

TABLE 1  
LEVEL OF SERVICE ANALYSIS - PM PEAK HOUR  
S. 288TH STREET/SR-99

| <u>Condition</u>   | <u>Level of Service (Delay)</u>                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------|
| Existing           | EB - E ( 44 sec.)<br>WB - E ( 56 sec.)<br>NB - C ( 22 sec.)<br>SB - E ( 50 sec.)<br>OVERALL - E ( 43 sec.) |
| 2002 w/out Project | EB - F ( 62 sec.)<br>WB - F ( 76 sec.)<br>NB - C ( 24 sec.)<br>SB - F (   ** )<br>OVERALL - F (   ** )     |
| 2002 with Project  | EB - F (101 sec.)<br>WB - F ( 78 sec.)<br>NB - C ( 24 sec.)<br>SB - F (   ** )<br>OVERALL - F (   ** )     |

\*\* - Delay and LOS not meaningful when any v/c is greater than 1.2 or 1/PHF.

Where:

| <u>LOS</u> | <u>Delay</u>       |
|------------|--------------------|
| A          | ≤ 5 seconds        |
| B          | > 5 & ≤ 15 seconds |
| C          | >15 & ≤ 25 seconds |
| D          | >25 & ≤ 40 seconds |
| E          | >40 & ≤ 60 seconds |
| F          | >60 seconds        |

The results of the analysis indicate that three legs of the intersection are currently approaching a level of service "F" condition, although the overall intersection level of service is still "E". However, the additional trips associated with miscellaneous background traffic, along with the trips associated with Pacific Place, will result in a future intersection level of service "F" (with or without Pacific Place).

The City of Federal Way has indicated that their TIP includes a project to add both eastbound and westbound left-turn lanes at the S. 288th Street/SR-99 intersection. Should you or King County decide that a proportionate share contribution toward these improvements be appropriate, Pacific Place's share would be 0.71% (28 of 3962) of the total PM peak hour trips in the year 2002.



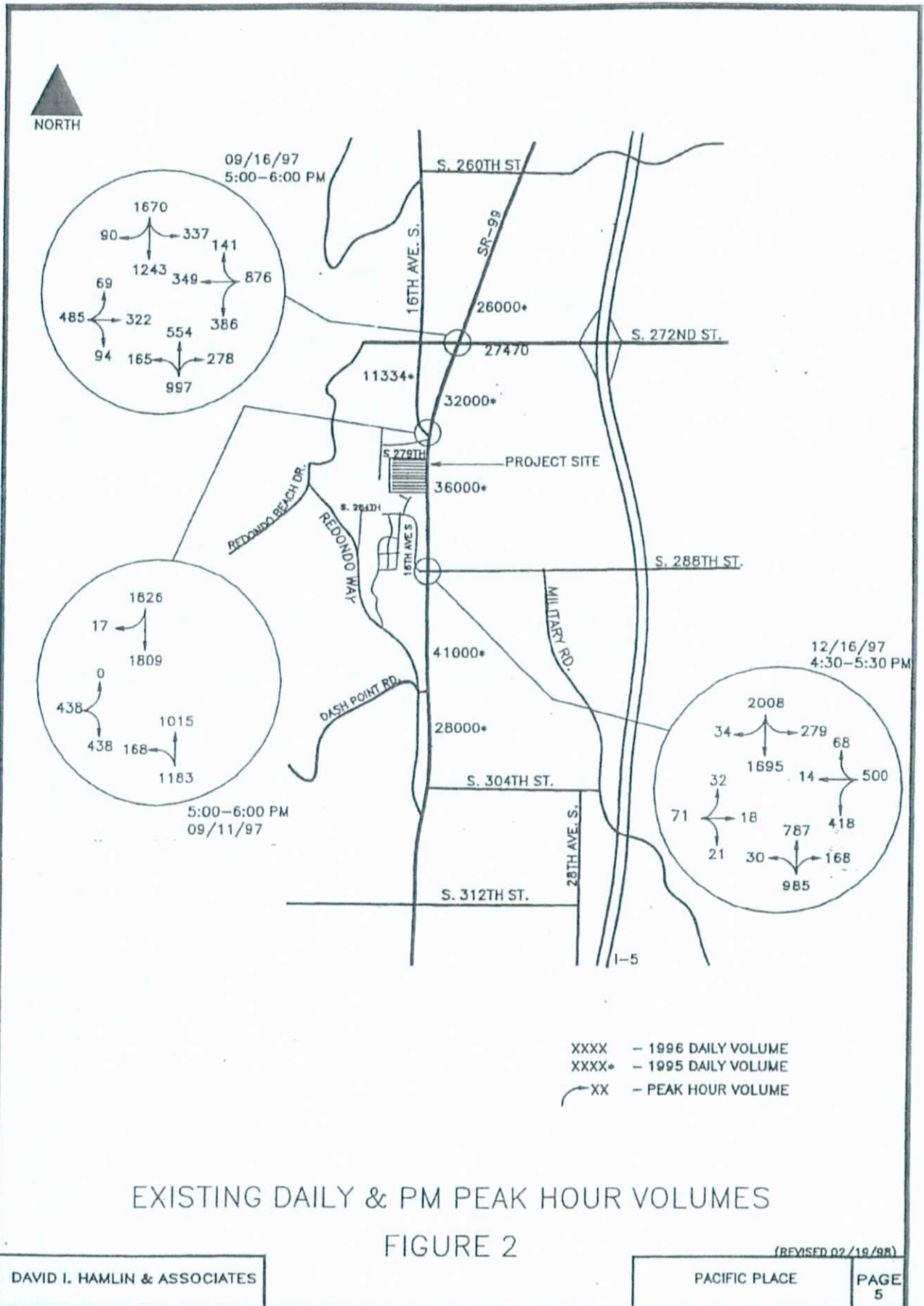
We trust that the above information adequately responds to your request. Please give me a call if you have any questions.

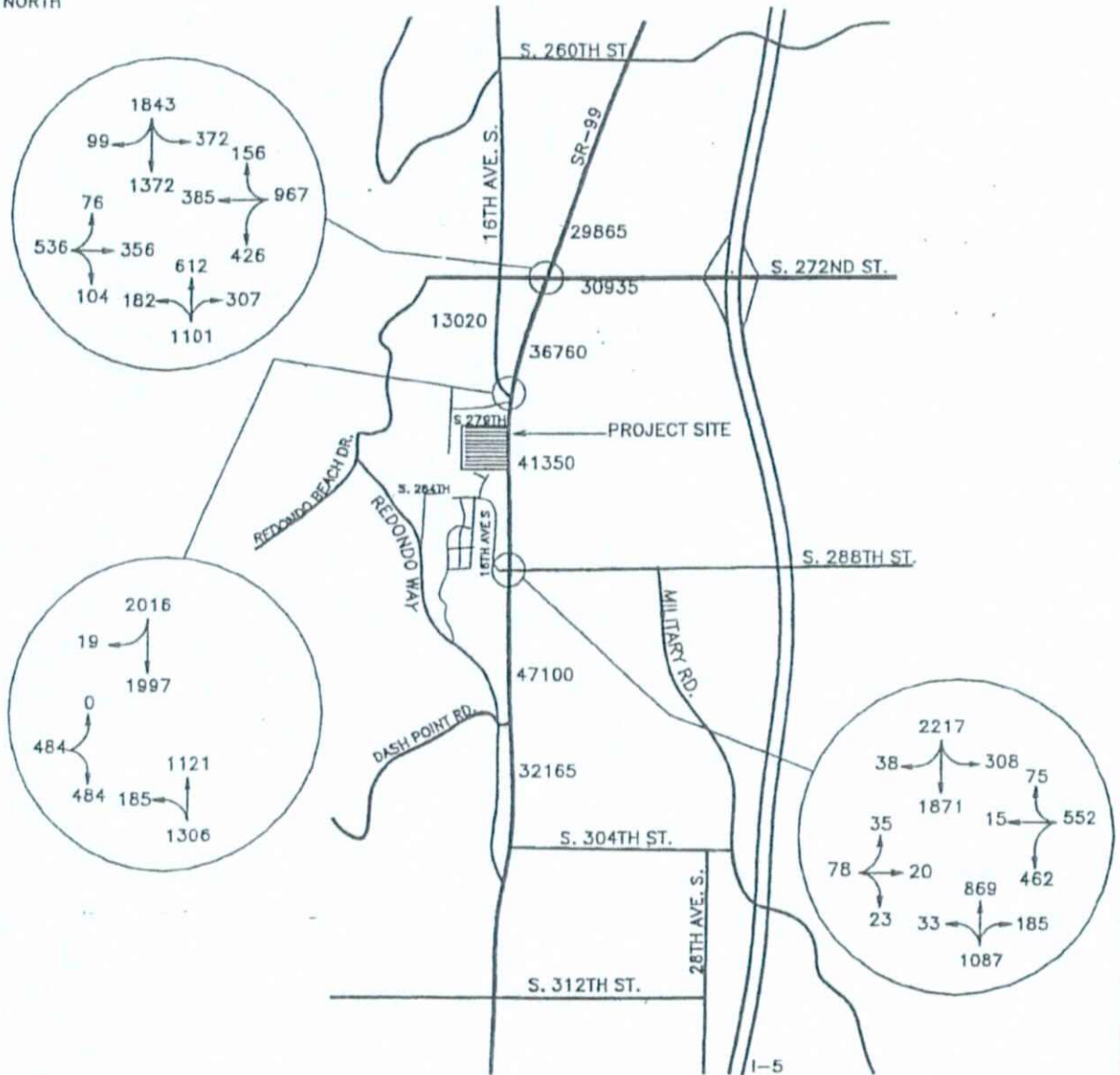
Sincerely,

A handwritten signature in cursive script, appearing to read "Geri Reinart".

Geri Reinart, P.E.  
David I. Hamlin and Associates

Attachments





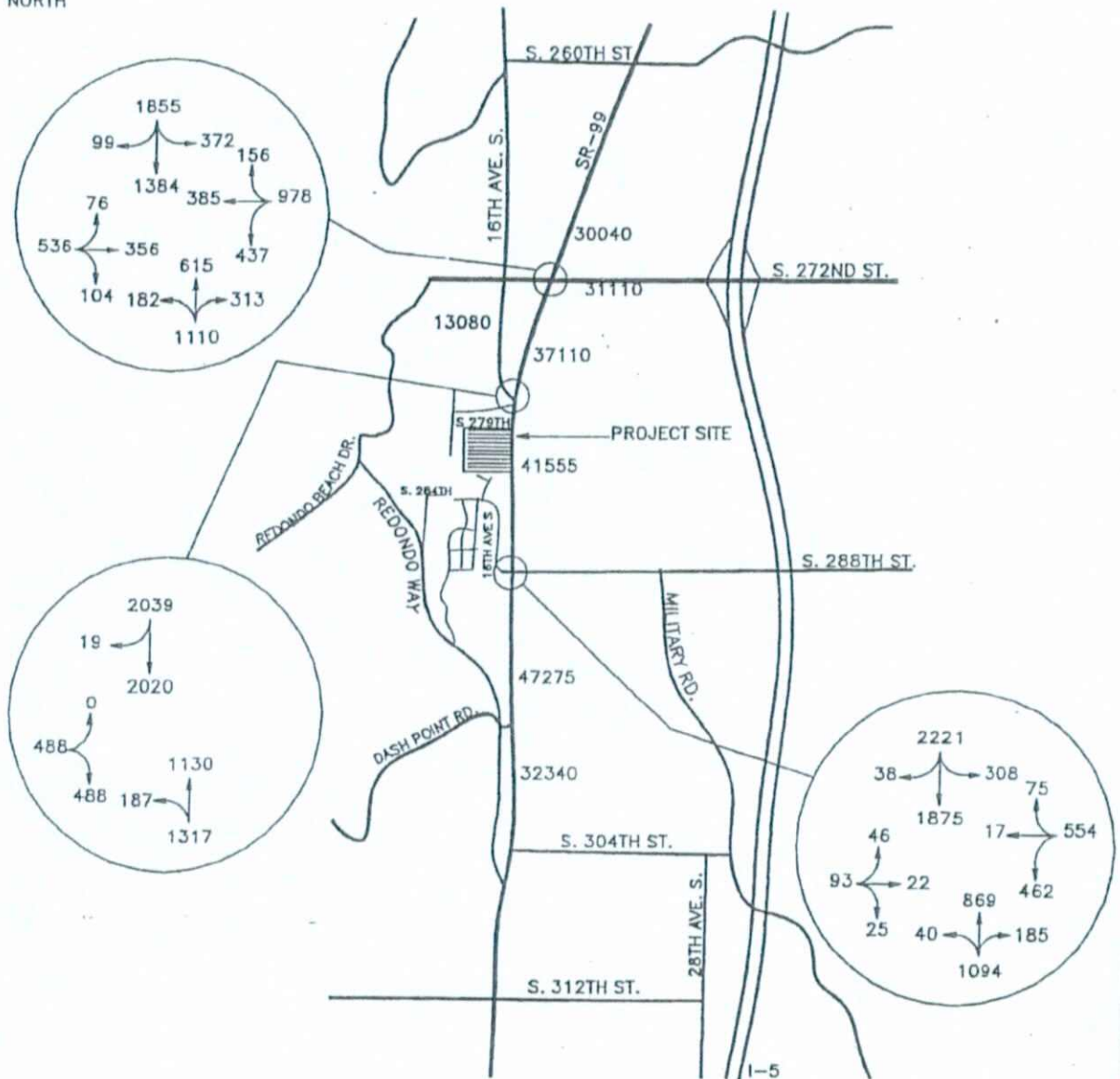
XXXX - 2002 DAILY VOLUME  
 → XX - PEAK HOUR VOLUME

2002 ESTIMATED DAILY & PM PEAK HOUR VOLUMES  
 (WITHOUT PROJECT)

FIGURE 6

(REVISED 02/19/98)





XXXX - 2002 DAILY VOLUME  
→ XX - PEAK HOUR VOLUME

## 2002 ESTIMATED DAILY & PM PEAK HOUR VOLUMES (WITH PROJECT)

FIGURE 7

(REVISED 02/19/98)

Center For Microcomputers In Transportation

University of Florida

512 Weil Hall

Gainesville, FL 32611-2083

(904) 392-0378

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: X288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: EXISTING PM PEAK HOUR

## Traffic and Roadway Conditions

|             | Eastbound |      |        | Westbound |      |        | Northbound |      |        | Southbound |      |      |
|-------------|-----------|------|--------|-----------|------|--------|------------|------|--------|------------|------|------|
|             | L         | T    | R      | L         | T    | R      | L          | T    | R      | L          | T    | R    |
| No. Lanes   | > 1       | <    |        | > 1       | 1    |        | 1          | 2    | 1      | 1          | 2    | <    |
| Volumes     | 32        | 18   | 21     | 418       | 14   | 68     | 30         | 787  | 168    | 279        | 1695 | 34   |
| PHF or PK15 | 0.81      | 0.81 | 0.81   | 0.91      | 0.91 | 0.91   | 0.93       | 0.93 | 0.93   | 0.93       | 0.93 | 0.93 |
| Lane W (ft) | 12.0      |      |        | 11.0      |      |        | 12.0       | 12.0 | 12.0   | 12.0       | 12.0 |      |
| Grade       | 3         |      |        | 0         |      |        | 0          |      |        | 0          |      |      |
| % Heavy Veh | 3         | 3    | 3      | 2         | 2    | 2      | 2          | 2    | 2      | 2          | 2    | 2    |
| Parking     | (Y/N)     | N    |        | (Y/N)     | N    |        | (Y/N)      | N    |        | (Y/N)      | N    |      |
| Bus Stops   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Con. Peds   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Ped Button  | (Y/N)     | Y    | 20.5 s | (Y/N)     | Y    | 17.5 s | (Y/N)      | Y    | 11.1 s | (Y/N)      | Y    | 8.3  |
| Arr Type    |           | 3    |        |           | 3    | 3      | 3          | 3    | 3      | 3          | 3    |      |
| RTOR Vols   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Lost Time   | 3.00      | 3.00 | 3.00   | 3.00      | 3.00 | 3.00   | 3.00       | 3.00 | 3.00   | 3.00       | 3.00 | 3.00 |

## Signal Operations

| Phase Combination |       | 1    | 2     | 3 | 4 | 5    | 6     | 7     | 8 |
|-------------------|-------|------|-------|---|---|------|-------|-------|---|
| EB                | Left  | *    |       |   |   | *    |       |       |   |
|                   | Thru  | *    |       |   |   |      |       | *     |   |
|                   | Right | *    |       |   |   |      |       | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| WB                | Left  |      | *     |   |   | *    |       |       |   |
|                   | Thru  |      | *     |   |   | *    |       | *     |   |
|                   | Right |      | *     |   |   | *    |       | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| NB                | Right |      |       |   |   |      |       |       |   |
| SB                | Right |      |       |   |   |      |       |       |   |
|                   | Left  |      |       |   |   | *    | *     |       |   |
|                   | Thru  |      |       |   |   | *    | *     | *     |   |
|                   | Right |      |       |   |   | *    | *     | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| Green             |       | 9.0A | 32.0A |   |   | 4.0A | 14.0A | 41.0A |   |
| Yellow/AR         |       | 4.0  | 4.0   |   |   | 4.0  | 4.0   | 4.0   |   |

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6 #7

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: X288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: EXISTING PM PEAK HOUR

## Volume Adjustment Worksheet

| Direction/<br>Mvt | Mvt<br>Vol | PHF  | Adj<br>Vol | Lane<br>Grp | Lane<br>Grp<br>Vol | No.<br>Ln | Lane<br>Util<br>Fact | Growth<br>Fact | Adj<br>Grp<br>Vol | Prop<br>LT | Prop<br>RT |
|-------------------|------------|------|------------|-------------|--------------------|-----------|----------------------|----------------|-------------------|------------|------------|
| EB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 32         | 0.81 | 40         |             |                    |           |                      |                |                   |            |            |
| Thru              | 18         | 0.81 | 22         | LTR         | 88                 | 1         | 1.000                | 1.000          | 88                | 0.45       | 0.30       |
| Right             | 21         | 0.81 | 26         |             |                    |           |                      |                |                   |            |            |
| WB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 418        | 0.91 | 459        |             |                    |           |                      |                |                   |            |            |
| Thru              | 14         | 0.91 | 15         | LT          | 474                | 1         | 1.000                | 1.000          | 474               | 0.97       | 0.00       |
| Right             | 68         | 0.91 | 75         | R           | 75                 | 1         | 1.000                | 1.000          | 75                | 0.00       | 1.00       |
| NB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 30         | 0.93 | 32         | L           | 32                 | 1         | 1.000                | 1.000          | 32                | 1.00       | 0.00       |
| Thru              | 787        | 0.93 | 846        | T           | 846                | 2         | 1.050                | 1.000          | 888               | 0.00       | 0.00       |
| Right             | 168        | 0.93 | 181        | R           | 181                | 1         | 1.000                | 1.000          | 181               | 0.00       | 1.00       |
| SB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 279        | 0.93 | 300        | L           | 300                | 1         | 1.000                | 1.000          | 300               | 1.00       | 0.00       |
| Thru              | 1695       | 0.93 | 1823       | TR          | 1860               | 2         | 1.050                | 1.000          | 1953              | 0.00       | 0.02       |
| Right             | 34         | 0.93 | 37         |             |                    |           |                      |                |                   |            |            |

## Saturation Flow Adjustment Worksheet

[illegible]



HCS: Signalized Intersection

Version 2.4d

02-19-1998 3

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: X288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: EXISTING PM PEAK HOUR

## Capacity Analysis Worksheet

|                               | Adj           | Sat           | Flow                       | Green Ratio | Lane Group Capacity | v/c Ratio |
|-------------------------------|---------------|---------------|----------------------------|-------------|---------------------|-----------|
| Direction /LnGrp              | Flow Rate (v) | Flow Rate (s) | Ratio (v/s)                | (g/c)       | (c)                 |           |
| EB                            |               |               |                            |             |                     |           |
| LTR                           | 88            | 1528          | 0.058                      | 0.083       | 127                 | 0.691 *   |
| WB                            |               |               |                            |             |                     |           |
| LT                            | 474           | 1717          | 0.276                      | 0.275       | 472                 | 1.004 *   |
| R                             | 75            | 1531          | 0.049                      | 0.275       | 421                 | 0.178     |
| NB                            |               |               |                            |             |                     |           |
| L                             | 32            | 1770          | 0.018                      | 0.042       | 74                  | 0.434 *   |
| T                             | 888           | 3725          | 0.238                      | 0.350       | 1304                | 0.681     |
| R                             | 181           | 1583          | 0.114                      | 0.350       | 554                 | 0.327     |
| SB                            |               |               |                            |             |                     |           |
| L                             | 300           | 1770          | 0.169                      | 0.192       | 339                 | 0.884     |
| TR                            | 1953          | 3714          | 0.526                      | 0.500       | 1857                | 1.052 *   |
|                               |               |               | Sum (v/s) critical = 0.878 |             |                     |           |
| Lost Time/Cycle, L = 12.0 sec |               |               | Critical v/c(x) = 0.975    |             |                     |           |

### Level of Service Worksheet

| Direction<br>/LnGrp  | v/c<br>Ratio | g/C<br>Ratio | Delay<br>d<br>1 | Del<br>Adj<br>Fact | Lane<br>Group<br>Cap | Calib<br>d<br>2 | Delay<br>d<br>2 | Lane<br>Grp<br>Del   | Lane<br>Grp<br>LOS | Delay<br>By<br>App | LOS<br>By<br>App |
|----------------------|--------------|--------------|-----------------|--------------------|----------------------|-----------------|-----------------|----------------------|--------------------|--------------------|------------------|
| EB                   |              |              |                 |                    |                      |                 |                 |                      |                    |                    |                  |
| LTR                  | 0.691        | 0.083        | 40.7            | 0.850              | 127                  | 16              | 9.8             | 44.3                 | E                  | 44.3               | E                |
| WB                   |              |              |                 |                    |                      |                 |                 |                      |                    |                    |                  |
| LT                   | 1.004        | 0.275        | 33.1            | 0.850              | 472                  | 16              | 32.8            | 60.9                 | F                  | 55.5               | E                |
| R                    | 0.178        | 0.275        | 25.2            | 0.850              | 421                  | 16              | 0.0             | 21.4                 | C                  |                    |                  |
| NB                   |              |              |                 |                    |                      |                 |                 |                      |                    |                    |                  |
| L                    | 0.434        | 0.042        | 42.7            | 0.850              | 74                   | 16              | 2.5             | 38.8                 | D                  | 22.4               | C                |
| T                    | 0.681        | 0.350        | 25.3            | 0.850              | 1304                 | 16              | 1.0             | 22.5                 | C                  |                    |                  |
| R                    | 0.327        | 0.350        | 21.8            | 0.850              | 554                  | 16              | 0.1             | 18.6                 | C                  |                    |                  |
| SB                   |              |              |                 |                    |                      |                 |                 |                      |                    |                    |                  |
| L                    | 0.884        | 0.192        | 35.9            | 0.850              | 339                  | 16              | 16.1            | 46.6                 | E                  | 49.5               | E                |
| TR                   | 1.052        | 0.500        | 22.8            | 0.850              | 1857                 | 16              | 30.6            | 50.0                 | E                  |                    |                  |
| Intersection Delay = |              |              |                 |                    |                      | 42.8            | sec/veh         | Intersection LOS = E |                    |                    |                  |

Center For Microcomputers In Transportation

University of Florida

512 Weil Hall

Gainesville, FL 32611-2083

(904) 392-0378

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: F288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: ~~288TH~~ PM PEAK HOUR w/out project

## Traffic and Roadway Conditions

|             | Eastbound |      |        | Westbound |      |        | Northbound |      |        | Southbound |      |      |
|-------------|-----------|------|--------|-----------|------|--------|------------|------|--------|------------|------|------|
|             | L         | T    | R      | L         | T    | R      | L          | T    | R      | L          | T    | R    |
| No. Lanes   | > 1       | <    |        | > 1       | 1    |        | 1          | 2    | 1      | 1          | 2    | <    |
| Volumes     | 35        | 20   | 23     | 462       | 15   | 75     | 33         | 869  | 185    | 308        | 1871 | 38   |
| PHF or PK15 | 0.81      | 0.81 | 0.81   | 0.91      | 0.91 | 0.91   | 0.93       | 0.93 | 0.93   | 0.93       | 0.93 | 0.93 |
| Lane W (ft) | 12.0      |      |        | 11.0      |      |        | 12.0       | 12.0 | 12.0   | 12.0       | 12.0 |      |
| Grade       | 3         |      |        | 0         |      |        | 0          |      |        | 0          |      |      |
| % Heavy Veh | 3         | 3    | 3      | 2         | 2    | 2      | 2          | 2    | 2      | 2          | 2    | 2    |
| Parking     | (Y/N)     | N    |        | (Y/N)     | N    |        | (Y/N)      | N    |        | (Y/N)      | N    |      |
| Bus Stops   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Con. Peds   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Ped Button  | (Y/N)     | Y    | 20.5 s | (Y/N)     | Y    | 17.5 s | (Y/N)      | Y    | 11.1 s | (Y/N)      | Y    | 8.3  |
| Arr Type    | 3         |      |        | 3         |      |        | 3          | 3    | 3      | 3          | 3    |      |
| RTOR Vols   | 0         |      |        | 0         |      |        | 0          |      |        | 0          |      |      |
| Lost Time   | 3.00      | 3.00 | 3.00   | 3.00      | 3.00 | 3.00   | 3.00       | 3.00 | 3.00   | 3.00       | 3.00 | 3.00 |

## Signal Operations

| Phase Combination |       | 1    | 2     | 3 | 4 | 5    | 6     | 7     | 8 |
|-------------------|-------|------|-------|---|---|------|-------|-------|---|
| EB                | Left  | *    |       |   |   | *    |       |       |   |
|                   | Thru  | *    |       |   |   |      |       | *     |   |
|                   | Right | *    |       |   |   |      |       | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| WB                | Left  |      | *     |   |   | *    | *     |       |   |
|                   | Thru  |      | *     |   |   | *    | *     | *     |   |
|                   | Right |      | *     |   |   | *    | *     | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| NB                | Right |      |       |   |   |      |       |       |   |
| SB                | Right |      |       |   |   |      |       |       |   |
|                   | Left  |      |       |   |   |      |       |       |   |
|                   | Thru  |      |       |   |   |      |       |       |   |
|                   | Right |      |       |   |   |      |       |       |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| Green             |       | 8.0A | 33.0A |   |   | 3.0A | 15.0A | 41.0A |   |
| Yellow/AR         |       | 4.0  | 4.0   |   |   | 4.0  | 4.0   | 4.0   |   |

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6 #7



HCS: Signalized Intersection

Version 2.4d

02-19-1998 2

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: F288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: ~~EXISTING~~ PM PEAK HOUR w/out project

## Volume Adjustment Worksheet

| Direction/<br>Mvt | Mvt<br>Vol | PHF  | Adj<br>Vol | Lane<br>Grp | Lane<br>Grp<br>Vol | No.<br>Ln | Lane<br>Util<br>Fact | Growth<br>Fact | Adj<br>Grp<br>Vol | Prop<br>LT | Prop<br>RT |
|-------------------|------------|------|------------|-------------|--------------------|-----------|----------------------|----------------|-------------------|------------|------------|
| EB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 35         | 0.81 | 43         |             |                    |           |                      |                |                   |            |            |
| Thru              | 20         | 0.81 | 25         | LTR         | 96                 | 1         | 1.000                | 1.000          | 96                | 0.45       | 0.29       |
| Right             | 23         | 0.81 | 28         |             |                    |           |                      |                |                   |            |            |
| WB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 462        | 0.91 | 508        |             |                    |           |                      |                |                   |            |            |
| Thru              | 15         | 0.91 | 16         | LT          | 524                | 1         | 1.000                | 1.000          | 524               | 0.97       | 0.00       |
| Right             | 75         | 0.91 | 82         | R           | 82                 | 1         | 1.000                | 1.000          | 82                | 0.00       | 1.00       |
| NB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 33         | 0.93 | 35         | L           | 35                 | 1         | 1.000                | 1.000          | 35                | 1.00       | 0.00       |
| Thru              | 869        | 0.93 | 934        | T           | 934                | 2         | 1.050                | 1.000          | 981               | 0.00       | 0.00       |
| Right             | 185        | 0.93 | 199        | R           | 199                | 1         | 1.000                | 1.000          | 199               | 0.00       | 1.00       |
| SB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 308        | 0.93 | 331        | L           | 331                | 1         | 1.000                | 1.000          | 331               | 1.00       | 0.00       |
| Thru              | 1871       | 0.93 | 2012       | TR          | 2053               | 2         | 1.050                | 1.000          | 2156              | 0.00       | 0.02       |
| Right             | 38         | 0.93 | 41         |             |                    |           |                      |                |                   |            |            |

## Saturation Flow Adjustment Worksheet

[illegible]



HCS: Signalized Intersection Version 2.4d 02-19-1998 3

Streets: (E-W) S. 288TH STREET (N-S) SR-99  
 Analyst: GR File Name: F288SR99.HC9  
 Area Type: Other 2-18-98 PM PEAK  
 Comment: ~~EXISTING~~ PM PEAK HOUR w/out project

### Capacity Analysis Worksheet

| Direction /LnGrp | Adj Flow Rate (v) | Adj Sat Flow Rate (s) | Flow Ratio (v/s) | Green Ratio (g/C) | Lane Group Capacity (c) | v/c Ratio |
|------------------|-------------------|-----------------------|------------------|-------------------|-------------------------|-----------|
| EB               |                   |                       |                  |                   |                         |           |
| LTR              | 96                | 1529                  | 0.063            | 0.075             | 115                     | 0.837 *   |
| WB               |                   |                       |                  |                   |                         |           |
| LT               | 524               | 1717                  | 0.305            | 0.283             | 486                     | 1.077 *   |
| R                | 82                | 1531                  | 0.054            | 0.283             | 434                     | 0.189     |
| NB               |                   |                       |                  |                   |                         |           |
| L                | 35                | 1770                  | 0.020            | 0.033             | 59                      | 0.593 *   |
| T                | 981               | 3725                  | 0.263            | 0.350             | 1304                    | 0.752     |
| R                | 199               | 1583                  | 0.126            | 0.350             | 554                     | 0.359     |
| SB               |                   |                       |                  |                   |                         |           |
| L                | 331               | 1770                  | 0.187            | 0.192             | 339                     | 0.976     |
| TR               | 2156              | 3714                  | 0.581            | 0.508             | 1888                    | 1.142 *   |

Sum (v/s) critical = 0.968

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 1.076

### Level of Service Worksheet

| Direction /LnGrp | v/c Ratio | g/C Ratio | Delay d 1 | Del Adj Fact | Lane Group Cap | Calib d 2 | Delay d 2 | Lane Grp Del | Lane Grp LOS | Delay By App | LOS By App |
|------------------|-----------|-----------|-----------|--------------|----------------|-----------|-----------|--------------|--------------|--------------|------------|
| EB               |           |           |           |              |                |           |           |              |              |              |            |
| LTR              | 0.837     | 0.075     | 41.6      | 0.850        | 115            | 16        | 26.2      | 61.5         | F            | 61.5         | F          |
| WB               |           |           |           |              |                |           |           |              |              |              |            |
| LT               | 1.077     | 0.283     | 32.7      | 0.850        | 486            | 16        | 56.3      | 84.1         | F            | 75.6         | F          |
| R                | 0.189     | 0.283     | 24.7      | 0.850        | 434            | 16        | 0.0       | 21.1         | C            |              |            |
| NB               |           |           |           |              |                |           |           |              |              |              |            |
| L                | 0.593     | 0.033     | 43.5      | 0.850        | 59             | 16        | 10.0      | 47.0         | E            | 23.8         | C          |
| T                | 0.752     | 0.350     | 26.2      | 0.850        | 1304           | 16        | 1.8       | 24.0         | C            |              |            |
| R                | 0.359     | 0.350     | 22.0      | 0.850        | 554            | 16        | 0.2       | 18.9         | C            |              |            |
| SB               |           |           |           |              |                |           |           |              |              |              |            |
| L                | 0.976     | 0.192     | 36.6      | 0.850        | 339            | 16        | 31.5      | 62.7         | F            | *            | *          |
| TR               | 1.142     | 0.508     | *         | 0.850        | 1888           | 16        | *         | *            | *            |              |            |

Intersection Delay = \* (sec/veh) Intersection LOS = \*

\* Delay and LOS not meaningful when any v/c is greater than 1.2 or 1/PHF

HCS: Signalized Intersection Version 2.4d

02-19-1998 1

Center For Microcomputers In Transportation  
University of Florida

512 Weil Hall

Gainesville, FL 32611-2083

(904) 392-0378

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: D288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: ~~EXISTING~~ PM PEAK HOUR w/ project

## Traffic and Roadway Conditions

|             | Eastbound |      |        | Westbound |      |        | Northbound |      |        | Southbound |      |      |
|-------------|-----------|------|--------|-----------|------|--------|------------|------|--------|------------|------|------|
|             | L         | T    | R      | L         | T    | R      | L          | T    | R      | L          | T    | R    |
| No. Lanes   | > 1       | <    |        | > 1       | 1    |        | 1          | 2    | 1      | 1          | 2    | <    |
| Volumes     | 46        | 22   | 25     | 462       | 17   | 75     | 40         | 869  | 185    | 308        | 1875 | 38   |
| PHF or PK15 | 0.81      | 0.81 | 0.81   | 0.91      | 0.91 | 0.91   | 0.93       | 0.93 | 0.93   | 0.93       | 0.93 | 0.93 |
| Lane W (ft) | 12.0      |      |        | 11.0      |      |        | 12.0       | 12.0 | 12.0   | 12.0       | 12.0 |      |
| Grade       | 3         |      |        | 0         |      |        | 0          |      |        | 0          |      |      |
| % Heavy Veh | 3         | 3    | 3      | 2         | 2    | 2      | 2          | 2    | 2      | 2          | 2    | 2    |
| Parking     | (Y/N)     | N    |        | (Y/N)     | N    |        | (Y/N)      | N    |        | (Y/N)      | N    |      |
| Bus Stops   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Con. Peds   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Ped Button  | (Y/N)     | Y    | 20.5 s | (Y/N)     | Y    | 17.5 s | (Y/N)      | Y    | 11.1 s | (Y/N)      | Y    | 8.3  |
| Arr Type    |           | 3    |        |           | 3    | 3      | 3          | 3    | 3      | 3          | 3    |      |
| RTOR Vols   |           |      | 0      |           |      | 0      |            |      | 0      |            |      | 0    |
| Lost Time   | 3.00      | 3.00 | 3.00   | 3.00      | 3.00 | 3.00   | 3.00       | 3.00 | 3.00   | 3.00       | 3.00 | 3.00 |

## Signal Operations

| Phase Combination |       | 1    | 2     | 3 | 4 | 5    | 6     | 7     | 8 |
|-------------------|-------|------|-------|---|---|------|-------|-------|---|
| EB                | Left  | *    |       |   |   | *    |       |       |   |
|                   | Thru  | *    |       |   |   |      |       | *     |   |
|                   | Right | *    |       |   |   |      |       | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| WB                | Left  |      | *     |   |   | *    | *     |       |   |
|                   | Thru  |      | *     |   |   | *    | *     | *     |   |
|                   | Right |      | *     |   |   | *    | *     | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| NB                | Right |      |       |   |   |      |       |       |   |
| SB                | Right |      |       |   |   |      |       |       |   |
|                   | Left  |      |       |   |   | *    |       |       |   |
|                   | Thru  |      |       |   |   | *    | *     | *     |   |
|                   | Right |      |       |   |   | *    | *     | *     |   |
|                   | Peds  |      |       |   |   |      |       |       |   |
| Green             |       | 8.0A | 33.0A |   |   | 3.0A | 15.0A | 41.0A |   |
| Yellow/AR         |       | 4.0  | 4.0   |   |   | 4.0  | 4.0   | 4.0   |   |

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6 #7



HCS: Signalized Intersection

Version 2.4d

02-19-1998 2

Streets: (E-W) S. 288TH STREET

(N-S) SR-99

Analyst: GR

File Name: D288SR99.HC9

Area Type: Other

2-18-98 PM PEAK

Comment: ~~EXISTING~~ PM PEAK HOUR w/ project

## Volume Adjustment Worksheet

| Direction/<br>Mvt | Mvt<br>Vol | PHF  | Adj<br>Vol | Lane<br>Grp | Lane<br>Grp<br>Vol | No.<br>Ln | Lane<br>Util<br>Fact | Growth<br>Fact | Adj<br>Grp<br>Vol | Prop<br>LT | Prop<br>RT |
|-------------------|------------|------|------------|-------------|--------------------|-----------|----------------------|----------------|-------------------|------------|------------|
| EB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 46         | 0.81 | 57         |             |                    |           |                      |                |                   |            |            |
| Thru              | 22         | 0.81 | 27         | LTR         | 115                | 1         | 1.000                | 1.000          | 115               | 0.50       | 0.27       |
| Right             | 25         | 0.81 | 31         |             |                    |           |                      |                |                   |            |            |
| WB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 462        | 0.91 | 508        |             |                    |           |                      |                |                   |            |            |
| Thru              | 17         | 0.91 | 19         | LT          | 527                | 1         | 1.000                | 1.000          | 527               | 0.96       | 0.00       |
| Right             | 75         | 0.91 | 82         | R           | 82                 | 1         | 1.000                | 1.000          | 82                | 0.00       | 1.00       |
| NB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 40         | 0.93 | 43         | L           | 43                 | 1         | 1.000                | 1.000          | 43                | 1.00       | 0.00       |
| Thru              | 869        | 0.93 | 934        | T           | 934                | 2         | 1.050                | 1.000          | 981               | 0.00       | 0.00       |
| Right             | 185        | 0.93 | 199        | R           | 199                | 1         | 1.000                | 1.000          | 199               | 0.00       | 1.00       |
| SB                |            |      |            |             |                    |           |                      |                |                   |            |            |
| Left              | 308        | 0.93 | 331        | L           | 331                | 1         | 1.000                | 1.000          | 331               | 1.00       | 0.00       |
| Thru              | 1875       | 0.93 | 2016       | TR          | 2057               | 2         | 1.050                | 1.000          | 2160              | 0.00       | 0.02       |
| Right             | 38         | 0.93 | 41         |             |                    |           |                      |                |                   |            |            |

### Saturation Flow Adjustment Worksheet

[illegible]



Streets: (E-W) S. 288TH STREET (N-S) SR-99  
 Analyst: GR File Name: D288SR99.HC9  
 Area Type: Other 2-18-98 PM PEAK  
 Comment: ~~EXISTING~~ PM PEAK HOUR w/ project

## Capacity Analysis Worksheet

| Direction /LnGrp              | Adj Flow Rate (v) | Adj Sat Flow Rate (s) | Flow Ratio (v/s) | Green Ratio (g/C)          | Lane Group Capacity (c) | v/c Ratio |
|-------------------------------|-------------------|-----------------------|------------------|----------------------------|-------------------------|-----------|
| EB                            |                   |                       |                  |                            |                         |           |
| LTR                           | 115               | 1531                  | 0.075            | 0.075                      | 115                     | 1.002 *   |
| WB                            |                   |                       |                  |                            |                         |           |
| LT                            | 527               | 1718                  | 0.307            | 0.283                      | 487                     | 1.083 *   |
| R                             | 82                | 1531                  | 0.054            | 0.283                      | 434                     | 0.189     |
| NB                            |                   |                       |                  |                            |                         |           |
| L                             | 43                | 1770                  | 0.024            | 0.033                      | 59                      | 0.729 *   |
| T                             | 981               | 3725                  | 0.263            | 0.350                      | 1304                    | 0.752     |
| R                             | 199               | 1583                  | 0.126            | 0.350                      | 554                     | 0.359     |
| SB                            |                   |                       |                  |                            |                         |           |
| L                             | 331               | 1770                  | 0.187            | 0.192                      | 339                     | 0.976     |
| TR                            | 2160              | 3714                  | 0.582            | 0.508                      | 1888                    | 1.144 *   |
|                               |                   |                       |                  | Sum (v/s) critical = 0.988 |                         |           |
| Lost Time/Cycle, L = 12.0 sec |                   |                       |                  | Critical v/c(x) = 1.097    |                         |           |

## Level of Service Worksheet

| Direction /LnGrp | v/c Ratio | g/C Ratio | Delay d 1 | Del Adj Fact | Lane Group Cap | Calib d 2 | Delay d 2 | Lane Grp Del | Lane Grp LOS | Delay By App | LOS By App |
|------------------|-----------|-----------|-----------|--------------|----------------|-----------|-----------|--------------|--------------|--------------|------------|
| EB               |           |           |           |              |                |           |           |              |              |              |            |
| LTR              | 1.002     | 0.075     | 42.2      | 0.850        | 115            | 16        | 65.1      | 100.9        | F            | 100.9        | F          |
| WB               |           |           |           |              |                |           |           |              |              |              |            |
| LT               | 1.083     | 0.283     | 32.7      | 0.850        | 487            | 16        | 58.5      | 86.3         | F            | 77.5         | F          |
| R                | 0.189     | 0.283     | 24.7      | 0.850        | 434            | 16        | 0.0       | 21.1         | C            |              |            |
| NB               |           |           |           |              |                |           |           |              |              |              |            |
| L                | 0.729     | 0.033     | 43.7      | 0.850        | 59             | 16        | 22.9      | 60.1         | F            | 24.4         | C          |
| T                | 0.752     | 0.350     | 26.2      | 0.850        | 1304           | 16        | 1.8       | 24.0         | C            |              |            |
| R                | 0.359     | 0.350     | 22.0      | 0.850        | 554            | 16        | 0.2       | 18.9         | C            |              |            |
| SB               |           |           |           |              |                |           |           |              |              |              |            |
| L                | 0.976     | 0.192     | 36.6      | 0.850        | 339            | 16        | 31.5      | 62.7         | F            | *            | *          |
| TR               | 1.144     | 0.508     | *         | 0.850        | 1888           | 16        | *         | *            | *            |              |            |

Intersection Delay = \* (sec/veh) Intersection LOS = \*

\* Delay and LOS not meaningful when any v/c is greater than 1.2 or 1/PHF

ENVIRONMENTAL SITE ASSESSMENT  
TAVIS PROPERTY  
28005 PACIFIC HIGHWAY SOUTH  
KING COUNTY, WASHINGTON

E-7816

September 23, 1997

PREPARED FOR  
GRANVILLE SOUTHERN CORPORATION



Joe Nessel, REA, REP  
Project Manager



EXPIRES 03/07/98

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Qualifications of Environmental Professionals  
Exploration Procedures and Test Pit Logs  
Analytical Laboratory Report

## EXECUTIVE SUMMARY

The following is a summary of our findings and recommendations concerning potential environmental issues identified during our assessment of the subject property. This summary should be used for introductory purposes and the reader should refer to the report for further clarification.

The subject property consists of a rectangular parcel encompassing approximately twelve (12) acres. The subject site property is located at 28005 Pacific Highway South, in King County, Washington. The property was undeveloped until used as a rural farm from the late 1940s until approximately 1995. Farm buildings were removed from the currently vacant subject site in 1995.

The surrounding area is mixed use residential, commercial/retail, parks, and schools.

ECI has performed a Phase I Environmental Assessment (ESA) of the Tavis Property, 28005 Pacific Highway South, King County, Washington, in conformance with the scope and limitations of ASTM Practice E-1527. This assessment has revealed no evidence of Recognized Environmental Conditions in connection with the subject property.

Deminimis conditions include miscellaneous types of refuse and debris scattered and in piles at various locations across the subject site, and abandoned vehicles.

## 1.0 INTRODUCTION

Earth Consultants, Inc. (ECI) has completed a Phase I Environmental Site Assessment (ESA) of the property located at 28005 Pacific Highway South, King County, Washington. This investigation was performed by ECI for Granville Southern Corporation. The work was performed in accordance with ECI's July 11, 1997 proposal, which was authorized by Mr. Michael Reid, President, on July 23, 1997. This report summarizes the project approach and findings.

### 1.1 Scope of Services

ECI conducted an ESA to evaluate the potential for contamination on the subject property resulting from past or present activities. The scope of work for this study was limited to the following tasks:

- A review of reasonably ascertainable information from various sources with respect to historical use of the property and its surroundings;
- A visual reconnaissance of the subject property, along with photographic documentation of selected points of interest;
- Reviews of:
  1. U.S. Environmental Protection Agency (EPA) Emergency Response Notification System (ERNS) list - list of EPA responses to sudden or accidental releases of hazardous substances to the environment.
  2. EPA National Priorities List (NPL) -List of Superfund sites;
  3. EPA CERCLIS (CERCLIS information System) List, which documents sites known to be contaminated;
  4. The EPA Resource Conservation Recovery Act (RCRA) Notifiers List, which lists businesses generating, transporting, treating, storing, or disposing of hazardous wastes as part of their operations.
  5. Washington Department of Ecology (Ecology) Toxic Cleanup Program (TCP) Lists, including Site Registers and Contaminants and Confirmed and Suspected Sites (CSCS) Reports, which documents sites in Washington that are currently confirmed or suspected of being contaminated at levels exceeding state regulatory criteria.



6. Ecology's Underground Storage Tank (UST) list.
  7. Ecology's Leaking Underground Storage Tank (LUST) list.
  8. King County active and abandoned landfill and transfer station site information
- Limited subsurface soil investigation.
  - Preparation of this written report.

The scope of the project did not include an audit of environmental regulatory compliance issues or permits.

## 1.2 Site Description

The subject property is located on the west side of Pacific Highway South in the 27900 and 28000 Blocks, west adjacent to the City of Federal Way, south King County, Washington. The rectangular shaped site encompasses approximately twelve (12) acres. Approximately 9.8 acres of the subject site are located in the northeast quarter of southeast quarter of Section 32, Township 22 North, Range 4 East. Approximately 2.2 acres encompassing the eastern portion of the subject site are located in the northwest quarter of the southwest quarter of Section 33, Township 22 North, Range 4 East.

The approximate location of the subject site is shown on Plate 1, Vicinity Map. A general layout of the site and surrounding properties is presented in Plate 2, Site Plan. Site Photographs are presented in Appendix A.

The eastern and western thirds of the currently vacant subject site is covered with trees and dense vegetation. The central, approximately one-third portion, of the subject site contains a wetland on the north and a grass covered area on the south. Land use in the surrounding area is a mixture of single-family and multiple-family residences, parks, commercial businesses, and schools. Puget Sound is located approximately 0.4 miles west of the subject site.

The subject site is located in an area of rolling hills. The referenced topographic map indicates the east edge of the subject property lies at an elevation of approximately three hundred seventy-five (375) feet, and the west edge at approximately three hundred (300) feet elevation, relative to the National Geodetic Datum of 1929. The site is located on the west side of a hill which crests approximately one-half mile east of the subject site. The eastern third of the subject site is a moderate to steep hillside which drops downward to the west (roughly 1V to 2H) approximately fifty feet in elevation. The remainder of the subject property slopes gently from the base of the hillside toward the west. A wetland area, previously identified by Wetland Resources, Inc., Federal Way, Washington, is located on the north central portion of the subject site. The wetland area encompasses approximately 2.5 acres, includes a small pond, and drains toward the west.

The north, south, and west adjacent properties are at essentially the same contour and elevation as the subject site. East adjacent Pacific Highway South is eight to ten feet higher in elevation than the subject site and properties east of the highway rise steeply twenty to forty feet in elevation. Properties approximately five hundred feet west of the subject site drop steeply downward toward the west and Puget Sound.

The subject property is bordered on the north and northwest by trees and vegetation on single-family residential properties (Photo 1 and 2). The subject property is bordered to the northeast by forestation and underbrush. The subject site is bordered on the east by multi-family residential apartment buildings across Pacific Highway South (Photo 3). The subject property is bordered on the southeast by forestation and underbrush. The subject site is bordered on the remainder of the south edge and the west by single-family residences (Photos 4, 5, and 6).



## 2.0 SUBSURFACE CONDITIONS

### 2.1 Geology

The referenced geologic map of Southwestern King County indicates that the site is underlain by the geological unit known as Quaternary Vashon Till. Till is a hard unsorted mixture of clay, silt, sand and gravel, and can be more than 150 feet thick. Although the till is relatively impermeable, thin beds of sand and gravel mapped within the till commonly yield small quantities of perched water.

During the referenced geotechnical study (GES) performed at the subject property by J. Keith Cross, P.E. in March 1997, and subsurface explorations by ECI in August 1997, logs from test pit excavations indicated that site was generally underlain by silty sand with gravel to the maximum explored depth of nineteen feet below ground surface (bgs). Two large areas of concrete and asphalt rubble fill are located on the site, one area in the northeast corner and the other area on the south central part of the subject property.

Beneath up to six feet of rubble fill or topsoil, brown loose silty, gravelly sand was encountered to approximately nine feet bgs. The brown silty sand encountered was medium dense and became gray dense to very dense from three to nine feet bgs, and extended to the maximum explored depth of nineteen feet bgs.

### 2.2 Groundwater

During the referenced March 1997 GES exploration, groundwater was encountered from 2.5 to twelve (12) feet bgs in test pits excavated on the central and western parts of the subject site. Groundwater was not encountered in test pits excavated on the eastern hillside near Pacific Highway South, or in the southwest and northwest corners of the subject site. During ECI's August 1997 subsurface exploration in some of the same GES locations, groundwater was not encountered to the maximum explored depth of seven feet bgs. A former domestic water well located near the base of the east hillside contains water approximately fifteen feet bgs. The referenced GES reports the well to be approximately 31 feet deep.

A small pond is located in a wetland area on the north central part of the subject site. Both the level and size of the pond tend to fluctuate seasonally during periods of dryer and wetter weather.

Based on topography in the general vicinity of the site and local surface drainage features, the inferred regional groundwater flow direction in the site vicinity is from the east toward the west. Groundwater conditions on the site may vary due to site-specific subsurface conditions and local surface hydrology. Fluctuations in groundwater levels and seepage rates are expected, depending on seasonal variation, amount of rainfall, surface water runoff, and other hydraulic factors.



### 3.0 SITE RECONNAISSANCE

On July 30, 1997, ECI representative, Mr. Joe Nessel, visited the subject property to look for evidence that the site has been environmentally impacted by past or ongoing activities. The focus of the reconnaissance was to identify obvious visual signs of potential environmental contamination caused by current and/or historical property activities. The site layout is shown on the Site Plan, Plate 2. Photographs of selected features at the site are included in Appendix A.

Our site reconnaissance included identifying the use and storage of hazardous substances, the potential presence of underground storage tanks (USTs), visible building materials potentially containing asbestos (ACMs), signs of stressed vegetation, stained soils, and illegal dumping. The subject site and adjacent properties were photographed. We also walked the perimeter of the property to observe adjacent properties to determine their land use, and how it might potentially affect the subject property.

#### 3.1 Site Observations

The currently undeveloped, rectangular shaped subject site encompasses approximately twelve acres. The eastern and western approximately one-third portions of the subject site are covered with forestation of mixed evergreen and deciduous trees (Photos 1 through 6). Dense brush, small trees, and vines are located beneath the tree canopy. The central third of the subject property is covered by a wetland on the northern portion (Photo 7) and a fill area covered with tall grass and weeds on the southern part (Photo 8). Dense blackberry vines and several fruit trees are located along the east side of the central fill and wetland area.

One entry to the subject site is via the northeast corner of the property. A metal tube gate and a cable are located across the entry. Concrete and asphalt rubble (Photo 9), along with silty sand and cobble, have been placed as fill in the northeast corner of the property. The fill is approximately fifteen feet in depth as it slopes steeply downward at the west edge and then moderately downward to the southwest. Several articles of discarded household and other plastic and metal debris were observed on the ground surface in a depressed area near the southwest corner of the fill area.

A collapsed former building is located at the west edge of the fill. Information provided by the property owner, Mr. Don Tavis, indicates that the structure was a former chicken-coop and vehicle storage facility. Rotten wood, metal fencing, metal rails, and other metal debris are located around two abandoned vehicle hulks in this area (Photo 10). Dense vegetation is growing around and through the debris.



A significant amount of metal debris, auto parts, and household debris were observed scattered around the northeast portion of the subject property. Three abandoned vehicle shells were located in the area south of the former chicken-coop (Photo 8). Areas of discarded household rubbish, debris, and yard wastes were observed primarily along the east and south edges of the subject property.

A water well covered by a small, wood-frame structure is located near the base of the east hillside at the east edge of the central property area (Photo 11). Mr. Tavis related in a conversation with ECI that he built the current structure over the well in approximately 1995. The well provided domestic water to the subject site from the late 1940s until approximately ten years ago when the water became non-potable due to an inflow of surface water from east adjacent properties. A large, above-ground, holed, rusted metal tank was observed next to the well house, and reported by Mr. Tavis to have been used for water storage.

A wash-out area from a storm sewer drain is located on the southeast hill side. The surface/storm water sewer system draining properties located east of the subject site and under the jurisdiction of the City of Federal Way Department of Public Works, flows under the east adjacent Pacific Highway South and discharges at two locations onto the east edge of the subject site. Off-site surface water management to the north, south, and west is performed by King County.

The surface/storm waters discharged onto the subject site from the east adjacent properties eventually drain into a wetland area located on the north central portion of the subject site. A small pond area is located at the south end of the wetland area. At the time of our site reconnaissance, the water level of the pond was approximately four feet below the surrounding ground surface. Concrete and wood debris, and an auto tire were located at the pond's east edge.

A second entrance to the subject site is provided near the center on the south edge of the subject property, at the end of 15th Avenue South. The south central area of the subject site is a relatively flat grass, weed, and blackberry covered area. Mr. Tavis reported that fill material had been placed in this area of the subject site in the late 1980s. A gravel/soil berm, three to four feet high and approximately two hundred feet in length, was located at the west edge of the south central area. Referenced documentation reviewed by ECI reveals that fill was placed in this area in the early 1980s.

On August 1, 1997, ECI excavated nine test pits in the fill area on the south central portion of the subject property. The test pits were observed for characteristics and an approximate delineation of fill materials. Soil samples were collected from two test pits of the deepest fill locations and submitted for laboratory analysis of potential pollutants. Air monitoring of the test pits for combustible gas and volatile organic compounds was performed. Discussion of the August 1, 1997 subsurface exploration is presented in Section 6.0 of this report.



There are no utilities currently located on the subject site. A domestic water well and on site septic system were previously utilized on the subject property. The Federal Way Water and Sewer District provides domestic water service and sanitary sewers adjacent to the subject site.

No signs of stained soil, spills, stressed vegetation, or sheens on surface water were observed on the subject property during our site reconnaissance. No indications of any subsurface structures such as vents from an underground storage tank (UST) were observed during our reconnaissance. However, complete observation of the site surface was limited by the presence of dense underbrush.

Mr. Tavis informed ECI that he has no knowledge of any petroleum or hazardous materials spills having occurred on the subject property. He had no knowledge of any environmental liens, or active or pending administrative or legal actions against the property relevant to hazardous substances.

#### **3.1.1 Transformers**

ECI did not observe any transformers at the subject site.

#### **3.1.2 Asbestos-Containing Materials (ACM)**

ECI did not observe any friable ACM at the subject site.

### **3.2 Survey of Adjacent Properties**

The subject property is bordered on the north and northwest by trees and vegetation located on single-family residence (SFR) land parcels (Photos 1 and 2). The subject property is bordered on the northeast by an approximate one hundred fifty (150) foot deep area of trees and dense vegetation. The Redondo Family Grocery, a convenience store and residence, is located north of the trees. The north adjacent properties follow essentially the same contour and elevations as the subject site.

The east side of the subject property is bordered by Pacific Highway South (aka. Highway 99), a four-lane asphalt paved highway (Photo 3). The highway slopes gently downward in elevation toward the north. Multi-family residential structures are located east of the highway. The east adjacent Pacific Highway South is approximately ten feet higher in elevation than the subject site. Properties located across the highway rise steeply twenty to forty feet higher in elevation.



The south side of the subject property is bordered by a forestation covered parcel to the southeast and SFRs on the remainder of the south edge (Photos 4 and 5). The south adjacent properties follow essentially the same contours and elevations as the subject property. A paved cul-de-sac on 15th Avenue South, located near the center of the south edge is three to four feet lower in elevation than the adjacent filled portion of the subject site.

The subject property is bordered on the west by chain-link fencing on adjacent rural SFRs parcels (Photo 6). The west adjacent properties are at essentially the same elevation as the subject property. The properties located approximately two hundred feet west of the subject site drop steeply downward toward the west and Puget Sound.

No obvious signs of contamination on adjacent properties were observed from the subject site during ECI's site reconnaissance. Based upon observations and information collected during our site reconnaissance, current tenants of adjacent properties are not expected to have environmentally impacted the subject parcel.

#### 4.0 SITE HISTORY RESEARCH

ECl researched the history of land use activities on and immediately surrounding the subject property to identify former land use that may have adversely affected soil and groundwater. For the purposes of this research we reviewed the following:

- Aerial photographs; 1936, 1946, 1960, 1969, 1970, 1974, 1980, 1985, 1990, and 1995.
- Chain-of-Title Documentation prepared by First American Title Insurance Company, Seattle, Washington.
- Historical information from the Puget Sound Branch of the Washington State Division of Archives and Records Management, Seattle, Washington.
- Historical Topographic maps dated 1961, 1968, and 1994.
- Interviews with people knowledgeable with respect to historical land use in the site vicinity.

#### 4.1 Historical Site Use

In 1936, the subject site was composed of parts of adjoining larger parcels of land which extended west from east adjacent Pacific Highway South. A 1936 aerial photograph reveals that the subject property was undeveloped, and covered with low growing vegetation and a sparsely treed. A small wood frame building shell was constructed on the northeast corner of the subject site in the late 1930s and remained unfinished until torn down in 1949.

In the early 1940s, the approximately one and one-half acres of the southeast portion of the subject site was under separate ownership from the remaining 10.5 acres of the subject site. The southeast portion of the site was permitted to revegetate and has remained undeveloped. This area was purchased by Mr. Tavis in 1995.

The 1946 aerial photo reveals that the undeveloped subject site remained covered with low growing vegetation and the wetland on the north central area of the site.

In 1946, the 10.5-acre portion of the subject site was purchased by Alvin Shepard, grandfather of Mr. Don Tavis, the current property owner. Mr. Shepard established a rural farm on the subject site. The farm was entered from Pacific Highway South by a driveway located on the northeast corner of the site. Mr. Shepard constructed a large chicken-coop on the northeast portion of the site in the early 1950s. He also constructed several small portable farm sheds, one which he resided in, on the eastern side of the wetland/pond area. In 1995, Mr. Tavis demolished the buildings, except for the chicken-coop which had collapsed prior to the 1980 aerial photo, and hauled off debris.



The 1969 aerial photograph reveals that the subject site was being excavated and reconfigured south of the wetland area. Mr. Tavis reported during a conversation with ECI, that Mr. Shepard had excavated and sold gravel from the property. The 1970 aerial photo shows the same area was regrowing with vegetation. The 1970 aerial also reveals a small fill and graded area on the northeast corner of the subject site.

The subject property remained essentially unchanged until approximately 1980 when aerial photos reveal that most of the site except south of the wetland was being overgrown with trees and vegetation. The 1980 aerial photos reveal that grading and filling was occurring in the area south of the wetland.

The 1985 aerial photo and grading permit documentation indicate that fill materials were placed both on the northeast part and on the south central part of the subject property at various periods throughout the 1980s. Documentation on the fill material indicated that it was primarily construction excavation soil, and demolition concrete and asphalt rubble. In 1989 the south central fill area was graded and hydroseeded with the grass that fairly well defines that fill area as it currently exists.

The subject site has remained unoccupied since 1994 and in its current undeveloped state since 1995.

#### 4.2 Historical Off-Site Use

In 1936, the area was primarily occupied by rural farms and undeveloped vegetation covered parcels. The 1936 aerial photograph reveals that rural farms were located east across adjacent Pacific Highway South, and south of the subject site. Undeveloped land with trees and vegetation was located north and west of the subject site. The Redondo Grocery store was shown located northeast of the site on the west side of Pacific Highway South in the 1936 aerial photo.

The general vicinity changed little before the 1960s. Some clearing and grading for development occurred in the area west of the subject site by the time of the 1946 aerial photograph which shows SFRS being located in the area along the west side of 13th Avenue South. The 1960 aerial photograph indicates that by that time, development of the area was being intensified with construction of SFRs north and west adjacent to the subject site. In 1960, rural farms were still located east and south of the subject site. The 1969 aerial photo reveals that the farm east of the site was being cleared and graded for the construction of the apartment buildings which are revealed in the 1970 aerial photograph.



By the time of the 1980 aerial photograph, farming activity had ceased on the south adjacent property and the areas further south were being developed with SFRs. Aside from the construction of additional multi-family and single-family residences to the east and south, the 1985 aerial photograph reveals little significant change in the immediate area.

In 1989, construction on the south adjacent Applewood housing development commenced. Other than construction of SFRs in Applewood, the 1990, and 1995 aerial photographs reveal little significant change in the site vicinity since 1989.

## 5.0 REGULATORY AGENCY RECORDS REVIEW

We reviewed the following regulatory agency database lists to obtain environmental information related to the subject property and for off-site properties at location distances from adjacent to the subject property to within one mile of the subject property. The mileage distance after each listing refers to the minimum search distance reviewed for this ESA.

- EPA Emergency Response Notification System (ERNS) - List of EPA responses to sudden or accidental releases of hazardous substances to the environment (subject property);
- EPA National Priorities List (NPL) - List of Superfund sites (1.0 mile);
- EPA Region 10 CERCLIS - List of sites currently being reviewed by the EPA (0.5 mile);
- EPA Region 10 RCRA Treatment, Storage, Disposal (TSD) Facility Notifiers List - List of hazardous waste TSD facilities (1.0 mile);
- EPA Region 10 RCRA Notifiers List - List of generators, transporters, and disposers of hazardous waste (adjacent properties);
- Ecology's Toxics Cleanup Program (TCP) List - List of sites other than leaking underground storage tank sites that are being cleaned up under the Model Toxics Control Act or are currently being investigated by Ecology, including Site Registers and Confirmed and Suspected Contaminated Sites Reports (1.0 mile);
- Ecology's Underground Storage Tank (UST) Registration List - List of underground storage tanks registered in the State of Washington (adjacent properties);
- Ecology's Leaking UST (LUST) Site List - List of registered leaking USTs in the State of Washington (0.5 mile);
- King County active and abandoned landfill documentation (0.5 mile).

Under the currently applicable Federal, state, and local regulations, owners of property contaminated by hazardous or regulated substances may be liable for cleanup actions, even though the substances have migrated onto their property from off-site sources. Furthermore, costly cleanup actions may be required under Washington's Model Toxics Control Act (MTCA) if site soils, sediments, surface water, and/or groundwater contain hazardous or regulated substances at levels that exceed MTCA criteria.

## **5.1 Subject Property**

The subject property was not listed on any of the regulatory agency database lists.

## **5.2 Surrounding Properties**

Refer to Plate 1, Vicinity Map, for street names and approximate locations for the sites listed below.

### **5.2.1 National Priorities List (NPL)**

There is one NPL (superfund) site located within one mile of the subject property.

### **5.2.2 CERCLIS List**

There are no CERCLIS sites listed within one-half mile of the subject site.

### **5.2.3 RCRA Treatment, Storage and Disposal (TSD) Facility Notifiers List**

There are no waste TSD facilities located within one mile of the subject site.

### **5.2.4 RCRA Notifiers List**

There are no generators, transporters, or disposers of hazardous waste listed for adjacent properties.

### **5.2.5 Toxics Cleanup Program (TCP) List**

There are no TCP sites located within one mile of the subject site.

### **5.2.6 Underground Storage Tank List**

No adjacent site is listed on the Ecology list of underground storage tanks (USTs).

### **5.2.7 Leaking Underground Storage Tank (LUST) List**

There are two LUST sites listed located within one-half mile of the subject site.

- |               |                                  |
|---------------|----------------------------------|
| 1) Site Name: | Glen's Auto Repair & Tire Center |
| Site Address: | 27606 16th Avenue South          |
|               | Federal Way, Washington          |
| Proximity:    | 0.25 mile north                  |



2) Site Name: Texaco #63-232-1486  
Site Address: 28806 Pacific Highway South  
Federal Way, Washington  
Proximity: 0.4 mile south

Based upon the inferred groundwater flow direction from east toward the west at the subject site, and the individual LUST sites, both LUST sites are located crossgradient to the subject site. Cleanup of soil is in progress at LUST site Number 1. LUST Site Number 2 is reported as cleaned up.

Based upon site distances, remedial actions taken, and inferred groundwater flow directions at these two LUST sites, the subject site is not expected to have been environmentally impacted by either of these LUST Sites.

#### 5.2.8 Landfills

A review of Seattle-King County Active Solid Waste Disposal Facilities and Abandoned Landfill documentation indicated no active solid waste disposal, transfer stations, or abandoned landfills are located within one-half mile of the subject property.

## 6.0 SOIL SAMPLING AND ANALYSIS

On August 1, 1997, Earth Consultants, Inc. (ECI) and Joe Hall Construction excavated test pits at ten locations, TP-1 through TP-10, on the subject site property. Test pit locations are identified on Plate 2. The locations were selected based on information in the referenced GES report, observed areas for potential contamination, and documentation on areas of fill locations.

The ten test pits were excavated with a backhoe. Subsurface soil samples were collected and screened every approximately 2.5 feet bgs. Four subsurface soil samples collected from three test pits were submitted for laboratory chemical analysis. One sample was collected from TP-1 in a depressed area in fill located on the northeast portion of the property. Three samples were collected from the subject site central fill area, two from TP-2 and one from TP-3, where fill material was indicated to have the greatest depth and contamination potential. Soils in the other six test pits were observed for soil characteristics in an effort to ascertain the areal and vertical extent of fill.

### 6.1 Field Observations

Tan silty sand generally lies beneath a layer of fill material of brown silty sand mixed with asphalt and concrete rubble, cobbles, and tree roots. Small pockets of light colored, silica like sand were encountered in TP-2 and a sample was submitted for analyses. Groundwater was not encountered to the maximum explored depth of seven feet bgs, consequently no groundwater samples were collected or submitted for analysis.

During the test pit excavations, no combustible gas was detected in or near test pits other than TP-2. A relatively insignificant amount of combustible gas, approximately 75 parts per million (ppm), was detected in the subsurface soil samples collected from TP-2 at five and seven feet bgs. This would equate to less than 0.01% methane, assuming the combustible gas was one hundred percent methane. The measured combustible gas concentration is representative of methane levels expected from the natural degradation of organic materials.

During the test pit excavations no odors were detected or visible staining observed on any surface or subsurface soil. PID readings for organic vapor levels of <1 ppm to 6 ppm were observed at TP-1 through TP-5.

PID readings, sample identification, and sample locations are identified on test pit logs in Appendix C.



## 6.2 Analysis and Results

Based upon the review of referenced documents, historical land use, and potential contaminants of concern, the subsurface soil sample collected from TP-1 (TP-1-1), fill soil sample collected from TP-2 (TP-2-5), and fill and underlying soil samples collected from TP-2 (TP-2-7) and TP-3 (TP-3-6), were analyzed by the CCI laboratory for total petroleum hydrocarbons (TPHs), halogenated volatile organic compounds (HVOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and chlorinated pesticides, chlorinated herbicides, and selected RCRA total metals arsenic (As), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), mercury (Hg), Selenium (Se), and Silver (Ag). Soil samples were initially screened for TPH presence and identification utilizing the Washington WTP-HCID procedure. After oil range TPHs were determined to be present in samples collected from TP-1 and TP-2 at levels potentially exceeding MTCA cleanup levels, analysis was performed for quantitation of the specific oil range TPHs.

A summary of analytical results for organic compounds is presented in Table 1. No HVOCs, PCBs, pesticides, or herbicides were detected in any of the samples submitted for analysis. Concentrations of oil-range TPHs detected in samples TP-1-1 (120 mg/kg) and TP-2 (150 mg/kg), are below the Model Toxics Control Act (MTCA) Soil Cleanup Level of 200 mg/kg for oil range TPHs.

SVOCs were detected in the subsurface soil samples collected from TP-1, TP-2, and TP-3. Bis(2-ethylhexyl)phthalate is a common component of plastics that was detected in TP-1-1 at 160  $\mu\text{g/kg}$  and TP-2-5 at 910  $\mu\text{g/kg}$ , both below the clean-up level of  $1.6 \times 10^6 \mu\text{g/kg}$ . PAHs were detected in the subsurface and fill soil samples collected from TP-1, TP-2, and TP-3. Only one PAH in sample TP-1-1, Chrysene (710  $\mu\text{g/kg}$ ), exceeded its practical quantitation limit (PQL) of 660  $\mu\text{g/kg}$ . The test pits were located in areas of extensive asphalt roadway fill material. Petroleum residues from asphalt road materials have high levels of PAHs. Asphaltic wastes used for structural or construction purposes, including fill, are excluded from regulation as a dangerous waste when PAHs present would be the only reason for such designation, and the presence of PAHs do not impact surface water or groundwater. The rationale is that asphalt related PAHs are ubiquitous and the asphalt fill material does not present additional human health or environmental risks when compared to previous use as asphalt paving.



| Table 1 Organic Compounds                  |        |        |        |        |                   |
|--------------------------------------------|--------|--------|--------|--------|-------------------|
| Sample                                     | TP-1-1 | TP-2-5 | TP-2-7 | TP-3-6 | Action Level      |
| Total Petroleum Hydrocarbons Mg/Kg         |        |        |        |        |                   |
| HCID-Gas Range                             | < 20   | --     | < 20   | < 20   | --                |
| HCID-Diesel Range                          | < 50   | --     | < 50   | < 50   | --                |
| HCID-Oil Range                             | > 100  | --     | > 100  | < 100  | --                |
| TPH-Diesel Range                           | 26     | --     | < 25   | --     | 200               |
| TPH-Oil Range                              | 120    | --     | 150    | --     | 200               |
| HVOCs-EPA 8260A                            | ND     | ND     | ND     | ND     | --                |
| Semi VOCs-EPA 8270 $\mu\text{g/kg}$        |        |        |        |        |                   |
| Bis(2-Ethylhexyl)Phthalate                 |        |        |        |        |                   |
| Phenanthrene*                              | 160    | 910    | < 100  | < 100  | $1.6 \times 10^6$ |
| Fluoranthene*                              | 690    | < 100  | 210    | < 100  | --                |
| Pyrene*                                    | 1400   | < 100  | < 100  | 200    | $3.2 \times 10^6$ |
| Benzo(A)Anthracene*                        | 1100   | < 100  | < 100  | 210    | $2.4 \times 10^6$ |
| Crysene*                                   | 460    | < 100  | < 100  | 100    | 660 PQL           |
| Benzo(B)Fluoranthene*                      | 710    | < 100  | < 100  | 100    | 660 PQL           |
| Benzo(K)Fluoranthene*                      | 510    | < 100  | < 100  | < 100  | 660 PQL           |
| Benzo(A)Pyrene*                            | 570    | < 100  | < 100  | < 100  | 660 PQL           |
| Indeno(1,2,3,-CD)Pyrene*                   | 640    | < 100  | < 100  | 110    | 660 PQL           |
|                                            | 450    | < 100  | < 100  | < 100  | 660 PQL           |
| PCBs and Chlorinated Pesticides - EPA 8080 | ND     | ND     | ND     | ND     | ND                |
| Chlorinated Herbicides - EPA 8150 MOD      | ND     | ND     | ND     | ND     | ND                |
| ND = Not Detected                          |        |        |        |        |                   |
| *PAH Compounds                             |        |        |        |        |                   |

Results for RCRA heavy metals detected in the subsurface soil samples collected from TP-1, TP-2, and TP-3 are presented in Table 2. Levels of the metals detected were below MTCA soil cleanup levels.

| Table 2 RCRA Heavy Metal Results (Mg/Kg) |            |                |                 |                   |                  |                  |                  |                  |                  |                  |
|------------------------------------------|------------|----------------|-----------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Sample No.                               | Location   | Depth (ft.bgs) | Arsenic         | Barium            | Cadmium          | Chromium         | Lead             | Mercury          | Selenium         | Silver           |
| TP1-1                                    | Test Pjt 1 | 1              | 2.1             | 63                | 0.3              | 17               | 60               | <0.025           | <1               | <0.4             |
| TP2-5                                    | Test Pit 2 | 5              | 2.2             | 56                | 0.5              | 36               | 140              | <0.025           | <1               | <0.4             |
| TP2-7                                    | Test Pit 2 | 7              | 3.4             | 61                | 0.3              | 72               | <8               | <0.025           | <1               | <0.4             |
| TP3-6                                    | Test Pit 3 | 6              | 2.9             | 85                | <0.2             | 13               | 7.1              | <0.025           | <1               | <0.4             |
| MTCA Soil Cleanup Level                  |            | --             | 20 <sup>A</sup> | 5600 <sup>A</sup> | 2.0 <sup>A</sup> | 100 <sup>A</sup> | 250 <sup>A</sup> | 1.0 <sup>A</sup> | 400 <sup>B</sup> | 400 <sup>B</sup> |
| A: Method A<br>B: Method B               |            |                |                 |                   |                  |                  |                  |                  |                  |                  |

## 7.0 FINDINGS and CONCLUSIONS

ECI has performed a Phase I ESA for the Tavis Property located in the 28000 Block Pacific Highway South, King County, Washington, in conformance with the scope and limitations of ASTM Practice 1527-94. ECI has reviewed reasonably ascertainable historical records, environmental records, and regulatory databases. This assessment has revealed no evidence of Recognized Environmental Conditions in connection with the property.

Deminimis conditions include miscellaneous types of refuse and debris scattered and in piles at various locations across the subject site, and abandoned vehicles.

Subsurface exploration and sampling indicated that only PAHs associated with asphalt fill material were above MTCA soil cleanup standards. The PAHs associated with the asphalt are not currently regulated. Placing the asphalt fill material beneath roadways during site development would further reduce potential exposure and impact from PAHs.



## 8.0 STANDARD LIMITATIONS

In preparing this report, ECI has reviewed reasonably ascertainable historical records and regulatory agency files/databases. ECI has interviewed public and private individuals as indicated in this document, and observed the subject property and surrounding property conditions. ECI has examined and relied on written documents, and oral statements made by others. ECI has not conducted an independent examination of facts contained in referenced materials and statements. ECI has assumed the genuineness of the documents and the information provided in the documents or statements is true and accurate.

ECI has conducted this project and prepared this report in accordance with generally accepted professional practices for the nature and conditions of the work complete in the same or similar localities, at the time the work was performed. ECI shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time this work was performed. ECI recognizes that facts or conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions described in this report at this time. Conclusions and recommendations were made within the operative constraints of the scope of work, budget, and schedule for this project. This report is not meant to represent a legal opinion. No other warranty, expressed or implied, is made.

This report is intended for the exclusive use of Granville Southern Corporation and its representatives for specific application to the subject property. Any future consultations or other services to third parties related to this project requires written authorization from Granville Southern Corporation. Any such ECI provided services to third parties is new work requiring formal agreement with the third party and will be performed in accordance with that formal agreement.

Our work did not include sampling and testing of groundwater, surface water, drinking water, radon gas, or air quality.

## 9.0 LIST OF REFERENCES

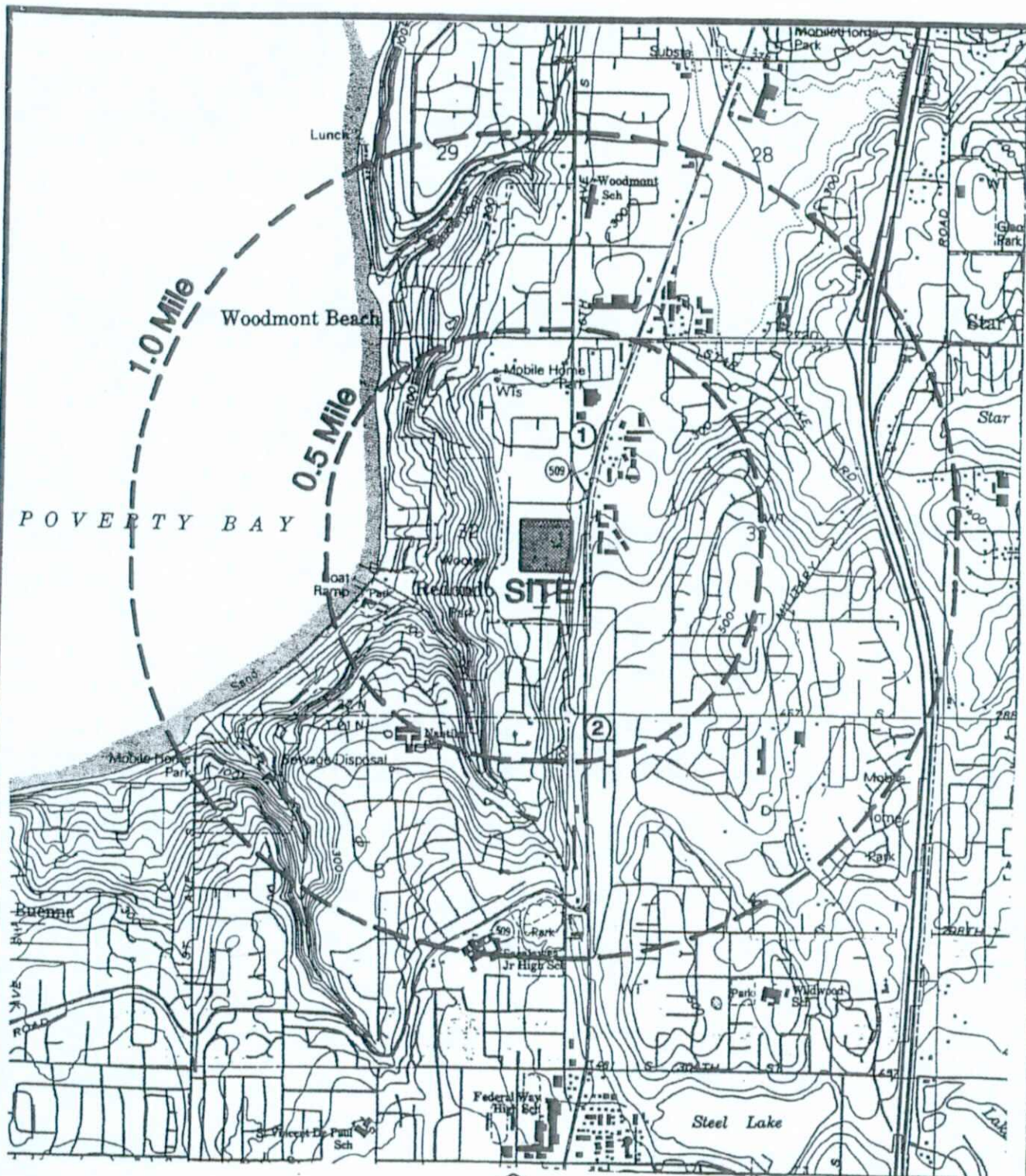
- 1) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process; American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103; Designation: E1527-94, June 1994.
- 2) Emergency Response Notification System (ERNS) Spills Report, October 1987 through December, 1996; U.S. EPA, Region 10, Seattle, Washington.
- 3) U.S. Environmental Protection Agency Region 10, Superfund Sites in the Pacific Northwest, April 1, 1997.
- 4) U.S. Environmental Protection Agency Superfund Program, CERCLIS, Region 10, Site Event Listing, 05/06/97.
- 5) U.S. Environmental Protection Agency RCRA Notifiers List, Region 10, 04/30/97.
- 6) Washington State Department of Ecology Toxic Cleanup Program - Hazardous Sites List 01/17/97; and Confirmed and Suspected Contaminated Sites list, 02/18/97.
- 7) Washington State Department of Ecology, Listing of Registered Underground Storage Tanks, 05/01/97.
- 8) Washington State Department of Ecology, Leaking Underground Storage Tank Sites, 05/01/97.
- 9) Seattle/King County Department of Public Health, "Abandoned Landfill Study in King County", 04/30/85
- 10) King County Department of Public Works, Solid Waste Division, Transfer Stations and Rural Landfill Locations List, 1995.
- 11) Aerial photographs dated 1960, 1970, 1980, and 1985; ECI in-house files.
- 12) Aerial photographs dated 1936, 1946, 1960, 1969, 1974, 1980, 1985, 1990, and 1995; Walker and Associates Photogrammetric Engineers, 12652 Interurban Avenue South, Seattle, Washington.
- 13) First American Title Insurance Company, 2101 Fourth Avenue, Seattle, Washington, 98121.



#### LIST OF REFERENCES, Continued

- 14) Historical Records, Puget Sound Regional Branch Washington Department of Archives and Records Management, 1809 South 140th, Seattle, Washington; Tax parcel numbers 322204-9009, 332204-9044, 332204-9045, and 332204-9052.
- 15) US Topographical Map; Poverty Bay Quadrangle, Washington, 7.5X15 Minute Series; U.S. Geological Survey; 1961, photo revised 1968, and revised 1994.
- 16) Plate 1-Geologic Map of Southwestern King County, Washington, State of Washington Water Supply Bulletin 28.
- 17) Telephone communication with Mr. Michael Reid, President, Granville Southern Corporation, Kirkland Washington; July 29, 1997.
- 18) Telephone communication with Mr. Don Tavis, subject property owner, Bellingham, Washington, August 4, 1997.
- 19) Telephone communication with Mr. Kevin Peterson, Surface Water Technician, City of Federal Way Department of Public Works, 33530 1st Way South, Federal Way, Washington; August 4, 1997.
- 20) Topography Map, Tavis Property; Eastside Consultants, Inc., 415 Rainier Boulevard North, Issaquah, Washington; July 1997.
- 21) King County Building and Land Development Division, 3600-136th Place Southeast, Bellevue, Washington; File C 8902613.
- 22) Telephone communication with Mr. Daniel R. Cargill, Toxics Cleanup Program, Department of Ecology, Northwest Regional Office, 3190 160th Avenue Southeast, Bellevue, Washington; August 28, 1997.
- 23) Fundamentals of Environmental Chemistry, Stanley E. Manahan, Lewis Publishers, Chelsea, Michigan; 1993.
- 24) Washington State Department of Ecology, Dangerous Waste Regulations, Chapter 173-303 WAC; Amended November 1995.





# **LEGEND**

○ LUST Site



Reference:  
Poverty Bay Quadrangle - Washington  
7.5 Minute Series (Topographic)  
By U.S. Geological Survey  
Dated 1961 (Revised 1994)



**Earth Consultants Inc.**  
Geotechnical Engineers, Geologists & Environmental Scientists

Vicinity Map  
Tavis Property  
King County, Washington

Proj. No. 7816

Drwn. GLS

Date Aug. '97

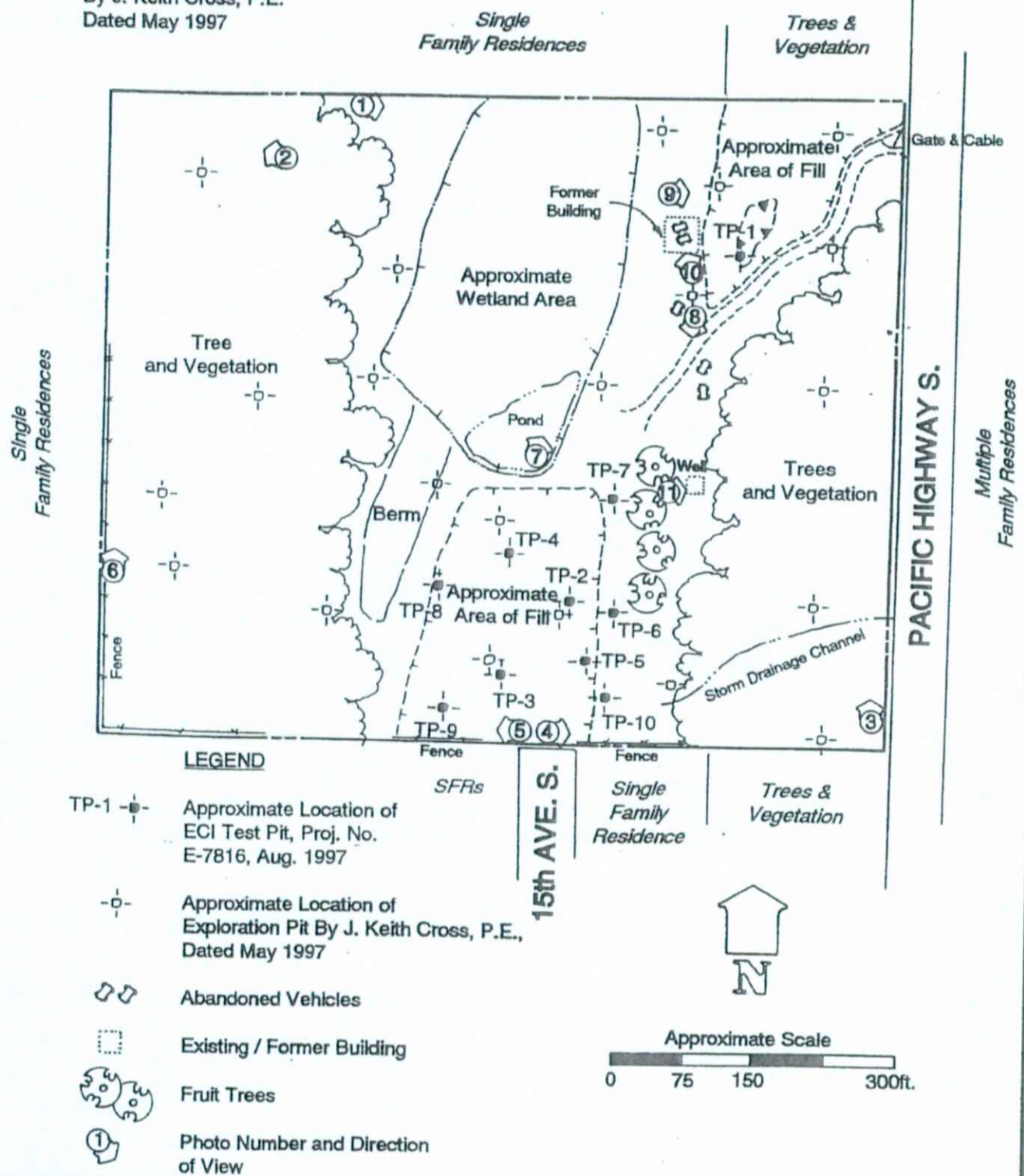
Checked JN

Date 8/19/97

Plate 1



Reference:  
Site Sketch  
Figure 1  
By J. Keith Cross, P.E.  
Dated May 1997



**Earth Consultants Inc.**  
Geotechnical Engineers, Geologists & Environmental Scientists

Site Plan  
Tavis Property  
King County, Washington

Proj. No. 7816

Drwn. GLS

Date Aug. '97

Checked JN

Date 8/19/97

Plate 2

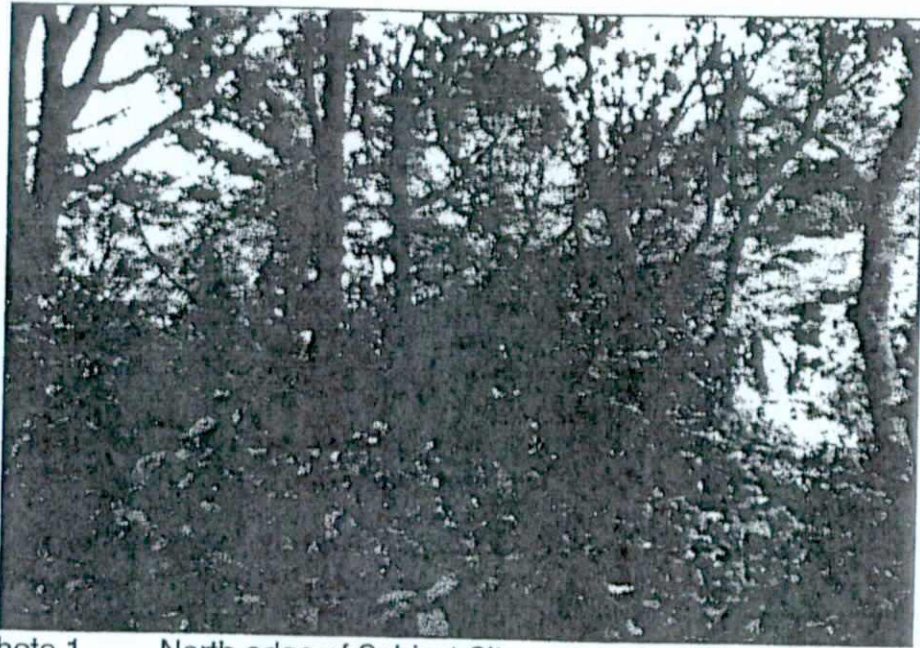


Photo 1 North edge of Subject Site and north adjacent properties.  
Viewed west to east.

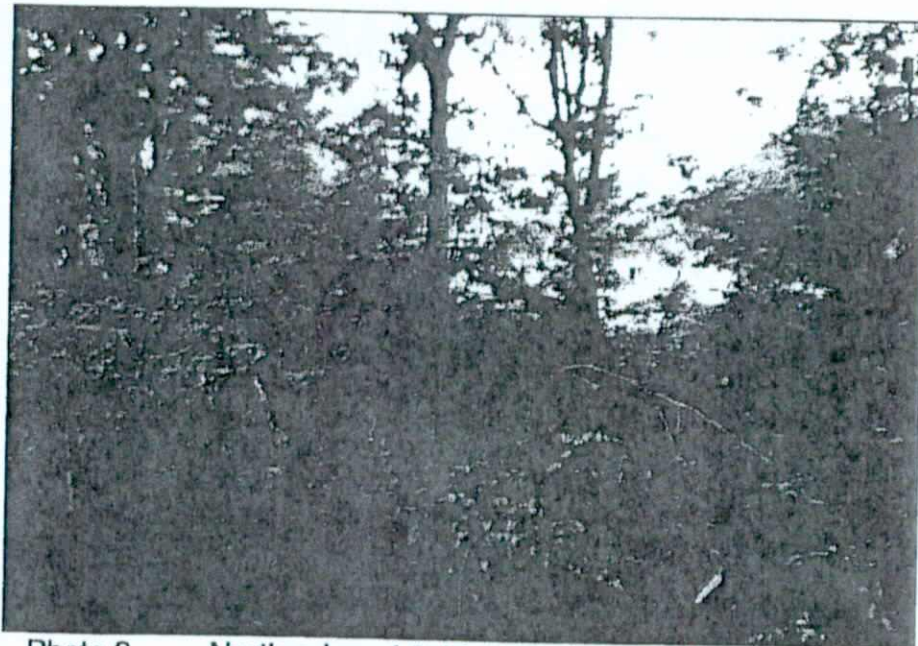


Photo 2 North edge of Subject Site and northwest adjacent  
properties. Viewed southeast to northwest.

Photos Dated 7/30/97



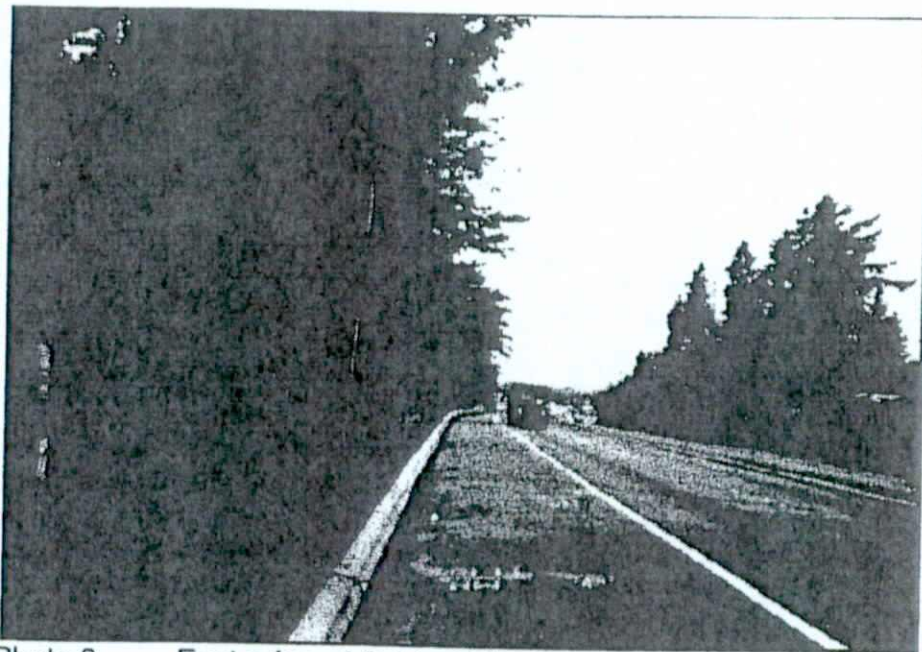


Photo 3 East edge of Subject Site and east adjacent properties.  
Viewed south to north.

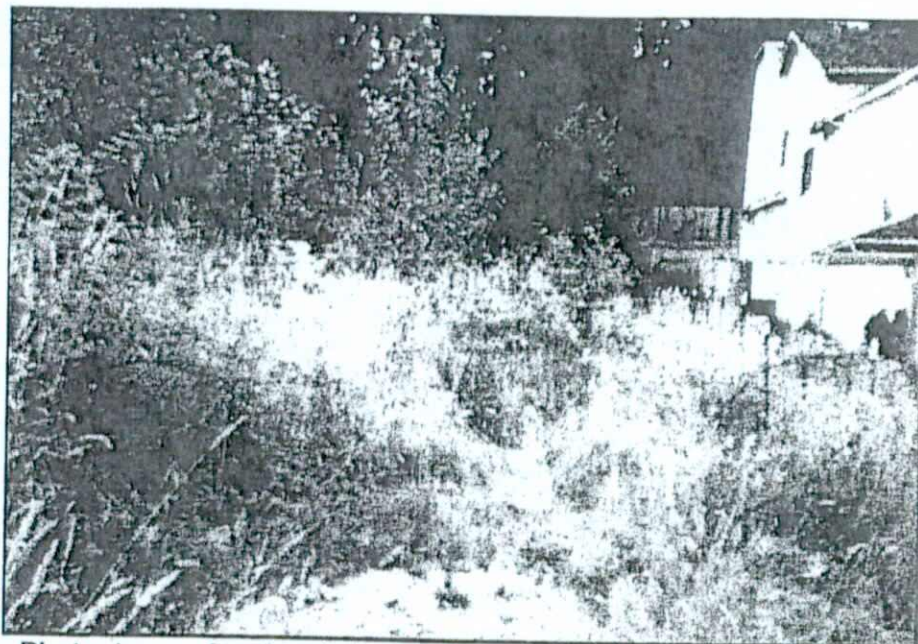


Photo 4 South edge of Subject Site and southeast adjacent  
properties. Viewed west to east.

Photos Dated 7/30/97

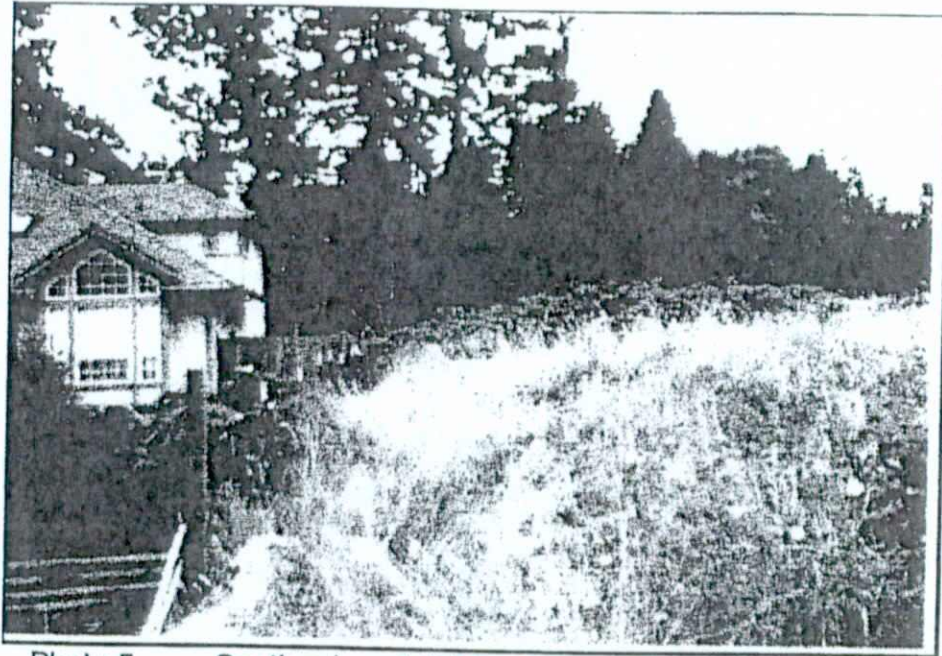


Photo 5 South edge of Subject Site and southwest adjacent properties. Viewed east to west.



Photo 6 West edge of Subject Site and northwest adjacent properties. Viewed south to north.

Photos Dated 7/30/97



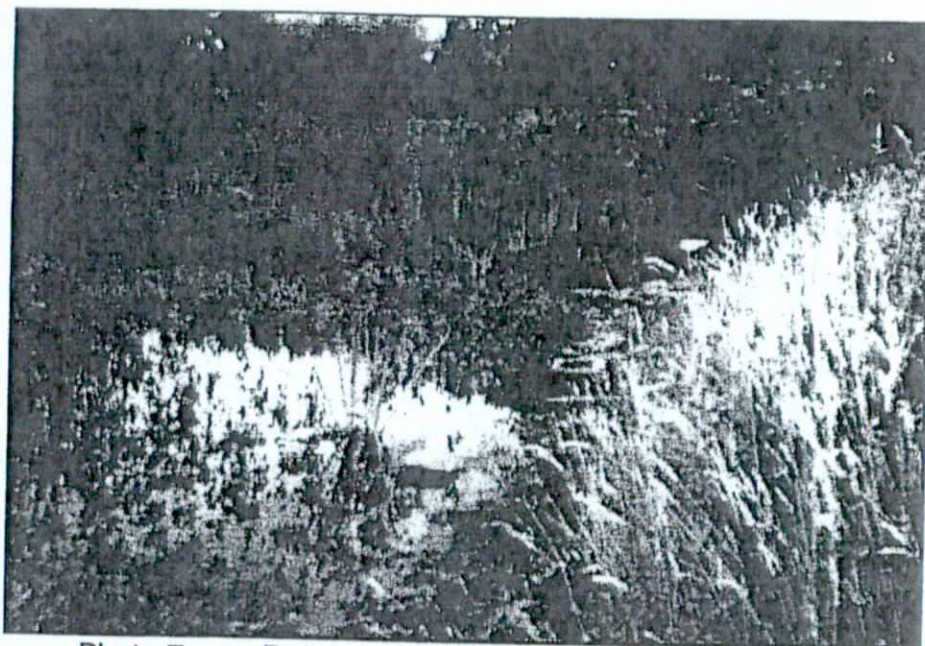


Photo 7 Debris in Wetland Area in central portion of Subject Site.



Photo 8 South central area of Subject Site. Viewed north to south. Fruit trees and abandoned vehicles along east side of central area.  
Photos Dated 7/30/97



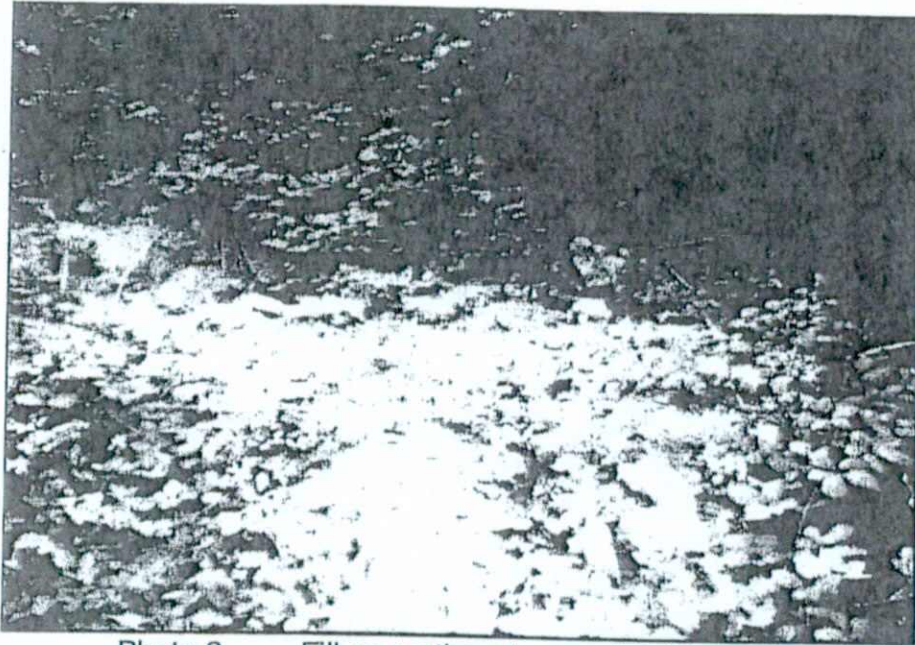


Photo 9      Fill on northeast area of Subject Site.



Photo 10      Former Building collapsed in northeast area of  
Subject Site.

Photos Dated 7/30/97

E-7816

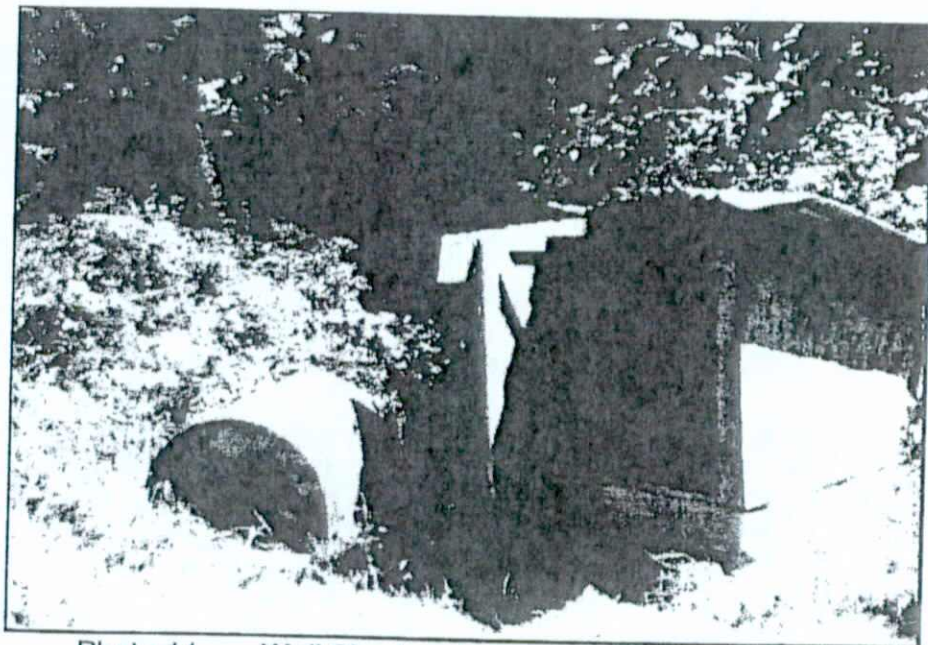


Photo 11 Well Shed and former Water Storage Tank.

Photo Dated 7/30/97



## QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

**ROBERT S. LEVINSON, P.E.**  
President/Principal

Mr. Levinson has managed comprehensive projects world-wide, with overall management and technical control. Projects include port and industrial facilities, commercial high- and medium-rise buildings, shoring, transmission lines, soil stabilization, slopes & embankments, landfills, and sewage treatment facilities. Mr. Levinson, as owner and president, has represented ECI for the past 19 years and is recognized for his contributions in both the engineering and civic community. He has authored technical papers on stabilization, tropically weathered soils, and expansive soils.

**DEBORAH J. KRISTOF**  
Project Manager

Ms. Kristof is an experienced environmental professional with broad range of corporate, management, and technical skills. She has twelve years of diverse experience in environmental assessments and remediation. Ms. Kristof has a B.S. degree in Geology, graduated with honors, and is a Registered Site Assessor. Ms. Kristof has served as project manager, field supervisor or field personnel on greater than fifty industrial, service station, fuel bulk plant, pipeline, and landfill sites. Her diverse experience includes site evaluation and assessments, developing exploration, sampling and analytical plans, directing monitoring well installation, and conducting soil and water sampling and field measurements. Ms. Kristof's skills also include designing remedial activities, computer compilation of field data, and report writing.

**JOE NESSEL, REP, REA**  
Project Manager

Mr. Nessel is a Senior Environmental Scientist and Consultant with over 20 years experience in the environmental, hazardous materials, and analytical chemistry fields. He has performed and supervised projects involving environmental investigations and remediations; Environmental Site Assessments; and hazardous wastes/substance cleanups. Areas of expertise include environmental investigations/assessments, laboratory testing and data assessment, transportation, and materials handling and disposal. Mr. Nessel has worked closely with the regulatory community and also has extensive experience in project planning. Mr. Nessel has successfully completed ASTM courses in Environmental Site Assessments for Commercial Real Estate.

**DALE D. TALTY**  
Environmental Scientist

Mr. Talty is an experienced environmental professional and registered geologist. He has eight years of experience managing and conducting Phase I and Phase II environmental site assessments, including over 150 Phase I assessments on sites ranging from apartment complexes to industrial facilities. His experience also includes monitoring well installation and development, soil vapor analysis programs, UST assessments, and geophysical surveys.



## Exploration Procedures and Test Pit Logs

E-7816

Test pits were excavated using a backhoe. Test pit lithology was logged in accordance with the Unified Soil Classification System (USCS). The environmental test pit logs are included in this Appendix.

Soil samples were collected, from the bottom of the excavation, with a clean stainless steel hand scoop or with the excavator bucket. The hand scoop was cleaned in a solution of Liquinox and water, then rinsed with distilled water between each sample collection to prevent cross-contamination between samples. Samples were collected directly from the excavation base or from the center of the excavation bucket. Clean disposal gloves were used during the collection and handling of each soil sample. All soil samples were immediately packed in laboratory grade glass jars, sealed, labelled and packed in a cooler with ice for delivery under chain-of-custody to CCI Analytical Laboratories, Inc., in Everett, Washington for analyses.

Field screening using a Photovac Microtip photoionization detector (PID) and a Model 1238 Gastech Hydrocarbon Surveyor (Gastech) was performed on soil samples collected during the excavation procedures. The PID instrument was used to measure volatile organic compound vapors, which provides an indication of the presence of hydrocarbons. The Gastech was used to monitor for and measure the presence of methane gas in the test pit excavations and samples collected. The PID was calibrated with 97 ppm Isobutylene and the Gastech was calibrated with 2.5% (25,000 ppm) methane prior to field use.

Samples collected for field screening were placed in a clean plastic bag, sealed, and gently shaken to release organic vapors into the bag's headspace. The PID and/or Gastech probe was inserted into the plastic bag, withdrawing vapors from the bag's headspace, and the reading was recorded.

Headspace vapor field screening results are site-specific and vary according to contaminant type, atmospheric conditions, and soil moisture content.

| MAJOR DIVISIONS      |                                                        |                                                       | GRAPH SYMBOL                                      | LETTER SYMBOL | TYPICAL DESCRIPTION                                                                                       |                                                                                             |
|----------------------|--------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Coarse Grained Soils | Gravel And Gravelly Soils                              | Clean Gravels (little or no fines)                    |                                                   | GW<br>gw      | Well-Graded Gravels, Gravel-Sand Mixtures, Little Or No Fines                                             |                                                                                             |
|                      |                                                        | Gravels With Fines (appreciable amount of fines)      |                                                   | GP<br>gp      | Poorly-Graded Gravels, Gravel-Sand Mixtures, Little Or No Fines                                           |                                                                                             |
|                      | More Than 50% Material Larger Than No. 200 Sieve Size  | More Than 50% Coarse Fraction Retained On No. 4 Sieve |                                                   | GM<br>gm      | Silty Gravels, Gravel-Sand-Silt Mixtures                                                                  |                                                                                             |
|                      |                                                        |                                                       |                                                   | GC<br>gc      | Clayey Gravels, Gravel-Sand-Clay Mixtures                                                                 |                                                                                             |
|                      |                                                        | Sand And Sandy Soils                                  | Clean Sand (little or no fines)                   |               | SW<br>sw                                                                                                  | Well-Graded Sands, Gravelly Sands, Little Or No Fines                                       |
|                      |                                                        |                                                       | More Than 50% Coarse Fraction Passing No. 4 Sieve |               | SP<br>sp                                                                                                  | Poorly-Graded Sands, Gravelly Sands, Little Or No Fines                                     |
| Fine Grained Soils   | Silt And Clays                                         | Liquid Limit Less Than 50                             |                                                   | SM<br>sm      | Silty Sands, Sand-Silt Mixtures                                                                           |                                                                                             |
|                      |                                                        |                                                       |                                                   | SC<br>sc      | Clayey Sands, Sand-Clay Mixtures                                                                          |                                                                                             |
|                      |                                                        |                                                       |                                                   | ML<br>ml      | Inorganic Silts & Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ Slight Plasticity |                                                                                             |
|                      | More Than 50% Material Smaller Than No. 200 Sieve Size | Silt And Clays                                        | Liquid Limit Greater Than 50                      |               | CL<br>cl                                                                                                  | Inorganic Clays Of Low To Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean |
|                      |                                                        |                                                       |                                                   |               | OL<br>ol                                                                                                  | Organic Silts And Organic Silty Clays Of Low Plasticity                                     |
|                      |                                                        |                                                       |                                                   |               | MH<br>mh                                                                                                  | Inorganic Silts, Micaceous Or Diatomaceous Fine Sand Or Silty Soils                         |
| Highly Organic Soils |                                                        |                                                       |                                                   | CH<br>ch      | Inorganic Clays Of High Plasticity, Fat Clays                                                             |                                                                                             |
|                      |                                                        |                                                       |                                                   | OH<br>oh      | Organic Clays Of Medium To High Plasticity, Organic Silts                                                 |                                                                                             |
|                      |                                                        |                                                       |                                                   | PT<br>pt      | Peat, Humus, Swamp Soils With High Organic Contents                                                       |                                                                                             |

|         |  |                              |
|---------|--|------------------------------|
| Topsoil |  | Humus And Duff Layer         |
| Fill    |  | Highly Variable Constituents |

The discussion in the text of this report is necessary for a proper understanding of the nature of the material presented in the attached logs.

DUAL SYMBOLS are used to indicate borderline soil classification.

C TORVANE READING, tsf  
qu PENETROMETER READING, tsf  
W MOISTURE, % dry weight  
P SAMPLER PUSHED  
\* SAMPLE NOT RECOVERED  
pcf DRY DENSITY, lbs. per cubic ft.  
LL LIQUID LIMIT, %  
PI PLASTIC INDEX

I 2" O.D. SPLIT SPOON SAMPLER  
II 24" I.D. RING OR SHELBY TUBE SAMPLER  
| WATER OBSERVATION WELL  
Σ DEPTH OF ENCOUNTERED GROUNDWATER DURING EXCAVATION  
▽ SUBSEQUENT GROUNDWATER LEVEL W/ DATE



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## LEGEND

Proj. No. 7816

Date Aug. '97

Plate D1



# Test Pit Log

|                                    |                  |                 |                           |  |
|------------------------------------|------------------|-----------------|---------------------------|--|
| Project Name:<br>Tavis Property    |                  |                 | Sheet 1 of 1              |  |
| Job No.<br>7816                    | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br>TP-1     |  |
| Excavation Contractor:<br>Joe Hall |                  |                 | Ground Surface Elevation: |  |

Notes:

|                   | W (%) | Graphic Symbol | Depth Ft. | Sample | USCS Symbol | Surface Conditions:                                                                                 |
|-------------------|-------|----------------|-----------|--------|-------------|-----------------------------------------------------------------------------------------------------|
| PID ppm<br><br><1 |       |                | 1         |        | SM          | FILL: Tan silty SAND with cobbles, loose, moist, concrete and asphalt rubble                        |
|                   |       |                | 2         |        |             |                                                                                                     |
|                   |       |                | 3         |        |             |                                                                                                     |
|                   |       |                | 4         |        |             |                                                                                                     |
| TP-1-1<br>1       |       |                | 4         | X      | ML          | Gray sandy SILT with gravel, till, dense, moist (CH4 = 0)                                           |
|                   |       |                | 5         |        |             | Test pit terminated at 6.0 feet below existing grade. No groundwater encountered during excavation. |
|                   |       |                | 6         |        |             |                                                                                                     |



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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D2 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97



# Test Pit Log

|                                   |                  |                 |                              |
|-----------------------------------|------------------|-----------------|------------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1           |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br><b>TP-2</b> |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation:    |

Notes:

|         | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample | USCS<br>Symbol | Surface Conditions: Depth of Sod 1" - 3"                                                            |
|---------|----------|-------------------|--------------|--------|----------------|-----------------------------------------------------------------------------------------------------|
| PID ppm |          |                   | 1            |        | SM             | <u>FILL</u> Tan silty SAND with gravel, loose, moist                                                |
| 6       |          |                   | 2            |        |                | (CH4 = 0)                                                                                           |
| TP-2-5  |          |                   | 3            |        | SM             | <u>FILL</u> Brown silty SAND with cobble, concrete and asphalt rubble, loose, moist                 |
| 4       |          |                   | 4            |        |                | -small pockets of light granular substance<br>(CH4 = 75ppm)                                         |
| TP-2-7  |          |                   | 5            |        | OL             | Brown silty SAND with organic silt, tree roots, soft, moist                                         |
| 2       |          |                   | 6            |        |                |                                                                                                     |
|         |          |                   | 7            |        |                | (CH4 = 75ppm)                                                                                       |
|         |          |                   |              |        |                | Test pit terminated at 7.0 feet below existing grade. No groundwater encountered during excavation. |

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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D3 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

# Test Pit Log

|                                   |                  |                 |                           |
|-----------------------------------|------------------|-----------------|---------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet of<br>1 1           |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br>TP-3     |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation: |

Notes:

|         | W (%) | Graphic Symbol | Depth Ft. | Sample | USCS Symbol | Surface Conditions: Depth of Sod 1"-3"                                                         |
|---------|-------|----------------|-----------|--------|-------------|------------------------------------------------------------------------------------------------|
| PID ppm |       |                | 1         |        | SM          | <u>FILL</u> : Silty SAND with gravel and cobbles, loose, moist                                 |
| 3       |       |                | 2         |        |             | (CH4 = 0)                                                                                      |
|         |       |                | 3         |        |             |                                                                                                |
| 3       |       |                | 4         |        |             | -small amount of concrete and asphalt chunks<br>(CH4 = 0)                                      |
| TP-3-6  |       |                | 5         |        | SM          | Gray silty SAND with gravel, dense, moist                                                      |
| 3.5     |       |                | 6         |        |             | (CH4 = 0)                                                                                      |
|         |       |                | 7         |        |             | Test pit terminated at 7.0 below existing grade. No groundwater encountered during excavation. |



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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D4 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97

# Test Pit Log

|                                   |          |                   |              |                 |                |                                                                                                     |  |
|-----------------------------------|----------|-------------------|--------------|-----------------|----------------|-----------------------------------------------------------------------------------------------------|--|
| Project Name:<br>Tavis Property   |          |                   |              |                 |                | Sheet of<br>1 1                                                                                     |  |
| Job No.<br>7816                   |          | Logged by:<br>JN  |              | Date:<br>8/1/97 |                | Test Pit No.:<br>TP-4                                                                               |  |
| Excavation Contactor:<br>Joe Hall |          |                   |              |                 |                | Ground Surface Elevation:                                                                           |  |
| Notes:                            |          |                   |              |                 |                |                                                                                                     |  |
|                                   | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample          | USCS<br>Symbol | Surface Conditions: Depth of Sod 1" - 4"                                                            |  |
| PTD ppm                           |          |                   | 1            |                 | SM             | FILL: Silty SAND with concrete rubble, loose, moist                                                 |  |
|                                   |          |                   | 2            |                 | SM             | FILL: Tan silty SAND with cobbles, loose, moist<br>(CH4 = 0)                                        |  |
| 3                                 |          |                   | 3            |                 | SM             | FILL: Tan silty SAND                                                                                |  |
|                                   |          |                   | 4            |                 |                | (CH4 = 0)                                                                                           |  |
| 2                                 |          |                   | 5            |                 | ML             | Brown to gray sandy SILT, dense, moist                                                              |  |
| TP-4-6                            |          |                   | 6            |                 |                |                                                                                                     |  |
|                                   |          |                   | 7            |                 |                | (CH4 = 0)                                                                                           |  |
| 1                                 |          |                   | 8            |                 |                | Test pit terminated at 8.0 feet below existing grade. No groundwater encountered during excavation. |  |

TPL 7816 9/2/97



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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D5 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.



# Test Pit Log

|                                   |                  |                 |                           |
|-----------------------------------|------------------|-----------------|---------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1        |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br>TP-5     |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation: |

Notes:

|         | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample | USCS<br>Symbol | Surface Conditions: Depth of Sod 3" - 4"                                                            |
|---------|----------|-------------------|--------------|--------|----------------|-----------------------------------------------------------------------------------------------------|
| PID ppm |          |                   |              |        |                |                                                                                                     |
| 2       |          |                   | 1            |        | SM             | <u>FILL</u> : Silty SAND with cobbles, loose, moist<br>(CH4 = 0)                                    |
|         |          |                   | 2            |        | SP             | Tan SAND                                                                                            |
|         |          |                   | 3            |        |                | Test pit terminated at 3.0 feet below existing grade. No groundwater encountered during excavation. |



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**Test Pit Log**  
Tavis Property  
King County, Washington

Proj. No. 7816

Dwn. GLS

Date Aug. '97

Checked 8/20/97

Date 8/20/97

Plate D6

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

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# Test Pit Log

|                                   |                  |                 |                              |
|-----------------------------------|------------------|-----------------|------------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1           |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br><b>TP-6</b> |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation:    |

Notes:

|                                                                                                     | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample | USCS<br>Symbol | Surface Conditions: Depth of Sod 2" - 4": blackberries |
|-----------------------------------------------------------------------------------------------------|----------|-------------------|--------------|--------|----------------|--------------------------------------------------------|
| PID ppm                                                                                             |          |                   |              |        | OL             | (Concrete rubble scattered on surface)                 |
| ND                                                                                                  |          |                   | 1            |        | SM             | Loose silty SAND, organic topsoil                      |
|                                                                                                     |          |                   | 2            |        |                | Tan silty SAND, dense, moist                           |
| Test pit terminated at 2.5 feet below existing grade. No groundwater encountered during excavation. |          |                   |              |        |                |                                                        |



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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D7 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97

# Test Pit Log

|                                                                                                                                                                                                       |          |                   |              |                 |                |                                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|--------------|-----------------|----------------|-----------------------------------------------------------------------------------------------------|--|
| Project Name:<br>Tavis Property                                                                                                                                                                       |          |                   |              |                 |                | Sheet of<br>1 1                                                                                     |  |
| Job No.<br>7816                                                                                                                                                                                       |          | Logged by:<br>JN  |              | Date:<br>8/1/97 |                | Test Pit No.:<br><b>TP-7</b>                                                                        |  |
| Excavation Contactor:<br>Joe Hall                                                                                                                                                                     |          |                   |              |                 |                | Ground Surface Elevation:                                                                           |  |
| Notes:                                                                                                                                                                                                |          |                   |              |                 |                |                                                                                                     |  |
|                                                                                                                                                                                                       | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample          | USCS<br>Symbol | Surface Conditions: Depth of Sod 6"                                                                 |  |
| PID ppm<br><br>ND                                                                                                                                                                                     |          |                   | 1<br>2<br>3  |                 | SM             | Tan silty SAND with gravel, dense                                                                   |  |
|                                                                                                                                                                                                       |          |                   |              |                 |                | Test pit terminated at 3.0 feet below existing grade. No groundwater encountered during excavation. |  |
|  <b>Earth Consultants Inc.</b><br><small>Geotechnical Engineers, Geologists &amp; Environmental Scientists</small> |          |                   |              |                 |                | <b>Test Pit Log</b><br>Tavis Property<br>King County, Washington                                    |  |
| Proj. No. 7816                                                                                                                                                                                        |          | Dwn. GLS          |              | Date Aug. '97   |                | Checked JN                                                                                          |  |
|                                                                                                                                                                                                       |          |                   |              | Date 8/20/97    |                | Plate D8                                                                                            |  |

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97



# Test Pit Log

|                                   |                  |                 |                           |
|-----------------------------------|------------------|-----------------|---------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1        |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br>TP-8     |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation: |

Notes:

|                                                                                                     | W<br>(%) | Graphic<br>Symbol                                                                 | Depth<br>Ft. | USCS<br>Symbol | Surface Conditions: Depth of Sod 0" - 2" |
|-----------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------------|----------------|------------------------------------------|
| PID ppm                                                                                             |          |  |              | SM             | <u>FILL</u> Tan silty SAND, loose, moist |
| ND                                                                                                  |          |  | 1            | SM             | Tan silty SAND, dense, moist             |
|                                                                                                     |          |                                                                                   | 2            |                |                                          |
|                                                                                                     |          |                                                                                   | 3            |                |                                          |
| Test pit terminated at 3.0 feet below existing grade. No groundwater encountered during excavation. |          |                                                                                   |              |                |                                          |

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Geotechnical Engineers, Geologists & Environmental Scientists

**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |          |
|----------------|----------|---------------|------------|--------------|----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D9 |
|----------------|----------|---------------|------------|--------------|----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

# Test Pit Log

|                                   |                  |                 |                              |
|-----------------------------------|------------------|-----------------|------------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1           |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br><b>TP-9</b> |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation:    |

Notes:

|         | W<br>(%) | Graphic<br>Symbol | Depth<br>Ft. | Sample | USCS<br>Symbol | Surface Conditions: Depth of Sod 1"- 2": blackberries                                               |
|---------|----------|-------------------|--------------|--------|----------------|-----------------------------------------------------------------------------------------------------|
| PID ppm |          |                   | 1            |        | SM             | <u>FILL</u> : Silty SAND with brick and rocks, loose, moist                                         |
| ND      |          |                   | 2            |        | SM             | Tan organic SILT and silty SAND                                                                     |
|         |          |                   | 3            |        |                | Test pit terminated at 3.5 feet below existing grade. No groundwater encountered during excavation. |



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Geotechnical Engineers, Geologists & Environmental Scientists

**Test Pit Log**  
Tavis Property  
King County, Washington

Proj. No. 7816

Dwn. GLS

Date Aug '97

Checked JN

Date 8/20/97

Plate D10

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97

# Test Pit Log

|                                   |                  |                 |                               |
|-----------------------------------|------------------|-----------------|-------------------------------|
| Project Name:<br>Tavis Property   |                  |                 | Sheet<br>1 of<br>1            |
| Job No.<br>7816                   | Logged by:<br>JN | Date:<br>8/1/97 | Test Pit No.:<br><b>TP-10</b> |
| Excavation Contactor:<br>Joe Hall |                  |                 | Ground Surface Elevation:     |

Notes:

|                                                                                                     | W<br>(%) | Graphic<br>Symbol                                                                 | Depth<br>Ft. | USCS<br>Symbol | Surface Conditions: Depth of Sod 2" - 4" |
|-----------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------------|----------------|------------------------------------------|
| PID ppm                                                                                             |          |  | 1            | SM             | <u>FILL</u> : Silty SAND, loose, moist   |
| ND                                                                                                  |          |  | 2            | SM             | Silty SAND                               |
| Test pit terminated at 2.5 feet below existing grade. No groundwater encountered during excavation. |          |                                                                                   |              |                |                                          |



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**Test Pit Log**  
Tavis Property  
King County, Washington

|                |          |               |            |              |           |
|----------------|----------|---------------|------------|--------------|-----------|
| Proj. No. 7816 | Dwn. GLS | Date Aug. '97 | Checked JN | Date 8/20/97 | Plate D11 |
|----------------|----------|---------------|------------|--------------|-----------|

Subsurface conditions depicted represent our observations at the time and location of this exploratory hole, modified by engineering tests, analysis and judgment. They are not necessarily representative of other times and locations. We cannot accept responsibility for the use or interpretation by others of information presented on this log.

TPL 7816 8/20/97





CCI  
ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 1  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP1-1 8/1/97 0845

### DATA RESULTS

| ANALYTE                   | METHOD     | RESULTS* | UNITS**   | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------------------------|------------|----------|-----------|--------------------|------------------|----------------|
| HCID-GAS RANGE            | WTPH-HCID  | ND(<20)  | MG/KG GAS |                    | 8/5/97           | AMR            |
| HCID-DIESEL RANGE         | WTPH-HCID  | ND(<50)  | MG/KG DSL |                    | 8/5/97           | AMR            |
| HCID-OIL RANGE            | WTPH-HCID  | >100     | MG/KG OIL |                    | 8/6/97           | AMR            |
| TPH-DIESEL RANGE          | WTPH-D EXT | 26       | MG/KG     | 200MG/KG           | 8/11/97          | AMR            |
| TPH-OIL RANGE             | WTPH-D EXT | 120      | MG/KG     | 200MG/KG           | 8/11/97          | AMR            |
| DICHLORODIFLUOROMETHANE   | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/4/97           | LRK            |
| CHLOROMETHANE             | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/4/97           | LRK            |
| VINYL CHLORIDE            | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/4/97           | LRK            |
| BROMOMETHANE              | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/4/97           | LRK            |
| CHLOROETHANE              | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,1-DICHLOROETHENE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| TRICHLOROFLUOROMETHANE    | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| METHYLENE CHLORIDE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,1-DICHLOROETHANE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| TRANS-1,2-DICHLOROETHENE  | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| CIS-1,2-DICHLOROETHENE    | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| CHLOROFORM                | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,1,1-TRICHLOROETHANE     | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| CARBON TETRACHLORIDE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROETHANE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| TRICHLOROETHENE           | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROPROPANE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| BROMODICHLOROMETHANE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| TRANS-1,3-DICHLOROPROPENE | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| CIS-1,3-DICHLOROPROPENE   | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,1,2-TRICHLOROETHANE     | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| TETRACHLOROETHYLENE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| DIBROMOCHLOROMETHANE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| BROMOFORM                 | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| CHLOROBENZENE             | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,1,2,2-TETRACHLOROETHANE | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROBENZENE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |
| 1,3-DICHLOROBENZENE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/4/97           | LRK            |

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 1  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP1-1 8/1/97 0845

### DATA RESULTS

| ANALYTE                       | METHOD    | RESULTS* | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|-------------------------------|-----------|----------|---------|--------------------|------------------|----------------|
| 1,4-DICHLOROBENZENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| BIS(2-CHLOROETHYL)ETHER       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENOL                        | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLOROPHENOL                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,3-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,4-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| BENZYL ALCOHOL/2-METHYLPHENOL | EPA-8270  | ND(<200) | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROISOPROPYL)ETHER   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROETHANE              | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSO-DI-N-PROPYLAMINE    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-METHYLPHENOL                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| NITROBENZENE                  | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| ISOPHORONE                    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROPHENOL                 | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DIMETHYLPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| BENZOIC ACID                  | EPA-8270  | ND(<500) | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHOXY)METHANE    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DICHLOROPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2,4-TRICHLOROBENZENE        | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| NAPHTHALENE                   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROANILINE               | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBUTADIENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLORO-3-METHYLPHENOL       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-METHYLNAPHTHALENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROCYCLOPENTADIENE     | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,6-TRICHLOROPHENOL         | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,5-TRICHLOROPHENOL         | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLORONAPHTHALENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROANILINE                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHYLENE                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| DIMETHYLPHTHALATE             | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,6-DINITROTOLUENE            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHENE                  | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |





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LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 1  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP1-1 8/1/97 0845

### DATA RESULTS

| ANALYTE                    | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| 3-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZOFURAN               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROTOLUENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROPHENOL              | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROPHENYL-PHENYLETHER | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIETHYLPHTHALATE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4,6-DINITRO-2-METHYLPHENOL | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSODIPHENYLAMINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-BROMOPHENYL-PHENYLETHER  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBENZENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PENTACHLOROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENANTHRENE               | EPA-8270 | 690       | UG/KG   |                    | 8/5/97           | LRK            |
| ANTHRACENE                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CARBAZOLE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-BUTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORANTHENE               | EPA-8270 | 1400      | UG/KG   |                    | 8/5/97           | LRK            |
| PYRENE                     | EPA-8270 | 1100      | UG/KG   |                    | 8/5/97           | LRK            |
| BUTYLBENZYLPHTHALATE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3,3'-DICHLOROBENZIDINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]ANTHRACENE         | EPA-8270 | 460       | UG/KG   |                    | 8/5/97           | LRK            |
| CHRYSENE                   | EPA-8270 | 710       | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-ETHYLHEXYL)PHTHALATE | EPA-8270 | 160       | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-OCTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[B]FLUORANTHENE       | EPA-8270 | 510       | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[K]FLUORANTHENE       | EPA-8270 | 570       | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]PYRENE             | EPA-8270 | 640       | UG/KG   |                    | 8/5/97           | LRK            |
| INDENO[1,2,3-CD]PYRENE     | EPA-8270 | 450       | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZ[A,H]ANTHRACENE      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[G,H,I]PERYLENE       | EPA-8270 | 510       | UG/KG   |                    | 8/5/97           | LRK            |
| a-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| g-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |





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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 1  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP1-1 8/1/97 0845

### DATA RESULTS

| ANALYTE            | METHOD       | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|--------------------|--------------|-----------|---------|--------------------|------------------|----------------|
| b-BHC              | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR         | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| d-BHC              | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ALDRIN             | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR EPOXIDE | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| CHLORDANE          | EPA-8080     | ND(<0.04) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN I       | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' DDE           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| DIELDRIN           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN             | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' -DDD          | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN II      | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4'-DDT           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN ALDEHYDE    | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN SULFATE | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| METHOXYCHLOR       | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| TOXAPHENE          | EPA-8080     | ND(<1)    | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1016           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1221           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1232           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1242           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1248           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1254           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1260           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| DALAPON            | EPA-8150 MOD | ND(<0.08) | MG/KG   |                    | 8/8/97           | SAS            |
| DICAMBA            | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| DICHLOROPROP       | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-D              | EPA-8150 MOD | ND(<0.04) | MG/KG   |                    | 8/8/97           | SAS            |
| SILVEX(2,4,5-TP)   | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4,5-T            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| DINOSEB            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-DB             | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPP               | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPA               | EPA-8150 MOD | ND(<0.06) | MG/KG   |                    | 8/8/97           | SAS            |



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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 1  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP1-1 8/1/97 0845

### DATA RESULTS

| ANALYTE  | METHOD      | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------|-------------|-----------|---------|--------------------|------------------|----------------|
| ARSENIC  | EPA-7060    | 2.1       | MG/KG   |                    | 8/8/97           | JLB            |
| BARIUM   | EPA-7081    | 63        | MG/KG   |                    | 8/14/97          | JLB            |
| CADMIUM  | EPA-7130    | 0.3       | MG/KG   |                    | 8/8/97           | JLB            |
| CHROMIUM | EPA-7190    | 17        | MG/KG   |                    | 8/8/97           | JLB            |
| LEAD     | EPA-7420    | 60        | MG/KG   |                    | 8/8/97           | JLB            |
| MERCURY  | EPA-7471MOD | ND(<.025) | MG/KG   |                    | 8/13/97          | JLB            |
| SELENIUM | EPA-7740    | ND(<1)    | MG/KG   |                    | 8/13/97          | JLB            |
| SILVER   | EPA-7760    | ND(<0.4)  | MG/KG   |                    | 8/8/97           | JLB            |

NOTE: DIESEL RANGE RESULTS ARE DUE TO FRONT OF OIL RANGE PRODUCT ELUTING IN DIESEL RANGE

\* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

\*\*\* ACTIONS LEVELS ARE PROVIDED ONLY WHEN PARAMETER DATA IS USED FOR A GENERALLY  
CONSISTENT APPLICATION. WHEN PROVIDED, THEY SHOULD BE USED AS GUIDELINES ONLY.  
THE APPROPRIATE REGULATORY DOCUMENT SHOULD BE CONSULTED BEFORE MAKING ANY  
DECISIONS BASED ON ANALYTICAL DATA

APPROVED BY: C142





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ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 2  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

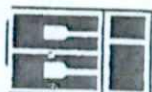
CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-5 8/1/97 0915

### DATA RESULTS

| ANALYTE                   | METHOD    | RESULTS* | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------------------------|-----------|----------|---------|--------------------|------------------|----------------|
| DICHLORODIFLUOROMETHANE   | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CHLOROMETHANE             | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | Lrk            |
| VINYL CHLORIDE            | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | Lrk            |
| BROMOMETHANE              | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CHLOROETHANE              | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,1-DICHLOROETHENE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| TRICHLOROFLUOROMETHANE    | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| METHYLENE CHLORIDE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,1-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| TRANS-1,2-DICHLOROETHENE  | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CIS-1,2-DICHLOROETHENE    | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CHLOROFORM                | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,1,1-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CARBON TETRACHLORIDE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,2-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| TRICHLOROETHENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,2-DICHLOROPROPANE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| BROMODICHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| TRANS-1,3-DICHLOROPROPENE | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CIS-1,3-DICHLOROPROPENE   | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,1,2-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| TETRACHLOROETHYLENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| DIBROMOCHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| BROMOFORM                 | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| CHLOROBENZENE             | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,1,2,2-TETRACHLOROETHANE | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,2-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,3-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| 1,4-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | Lrk            |
| BIS(2-CHLOROETHYL)ETHER   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | Lrk            |
| PHENOL                    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | Lrk            |
| 2-CHLOROPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | Lrk            |
| 1,3-DICHLOROBENZENE       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | Lrk            |
| 1,4-DICHLOROBENZENE       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | Lrk            |





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ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 2  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-5 8/1/97 0915

### DATA RESULTS

| ANALYTE                       | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|-------------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| 1,2-DICHLOROBENZENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZYL ALCOHOL/2-METHYLPHENOL | EPA-8270 | ND(<200)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROISOPROPYL)ETHER   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROETHANE              | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSO-DI-N-PROPYLAMINE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-METHYLPHENOL                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NITROBENZENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ISOPHORONE                    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROPHENOL                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DIMETHYLPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZOIC ACID                  | EPA-8270 | ND(<500)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHOXY)METHANE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DICHLOROPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2,4-TRICHLOROBENZENE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NAPHTHALENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROANILINE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBUTADIENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLORO-3-METHYLPHENOL       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-METHYLNAPHTHALENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROCYCLOPENTADIENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,6-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,5-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLORONAPHTHANLENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHYLENE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIMETHYLPHTHALATE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,6-DINITROTOLUENE            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROPHENOL             | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZOFURAN                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROTOLUENE            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROPHENOL                 | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORENE                      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROPHENYL-PHENYLETHER    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |



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CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 2  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-5 8/1/97 0915

### DATA RESULTS

| ANALYTE                    | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| DIETHYLPHthalate           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4,6-DINITRO-2-METHYLPHENOL | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSODIPHENYLAMINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-BROMOPHENYL-PHENYLETHER  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBENZENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PENTACHLOROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENANTHRENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ANTHRACENE                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CARBAZOLE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-BUTYLPHthalate        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORANTHENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PYRENE                     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BUTYLBENZYLPHthalate       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3,3'-DICHLOROBENZIDINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]ANTHRACENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CHRYSENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-ETHYLHEXYL)PHthalate | EPA-8270 | 910       | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-OCTYLPHthalate        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[B]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[K]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]PYRENE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| INDENO[1,2,3-CD]PYRENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZ[A,H]ANTHRACENE      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[G,H,I]PERYLENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| a-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| g-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| b-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR                 | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| d-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ALDRIN                     | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR EPOXIDE         | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| CHLORDANE                  | EPA-8080 | ND(<0.04) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN I               | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |



# CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 2  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-5 8/1/97 0915

# DATA RESULTS

| ANALYTE            | METHOD       | RESULTS*   | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|--------------------|--------------|------------|---------|--------------------|------------------|----------------|
| 4,4' DDE           | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| DIELDRIN           | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN             | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' -DDD          | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN II      | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4'-DDT           | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN ALDEHYDE    | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN SULFATE | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| METHOXYCHLOR       | EPA-8080     | ND(<0.02)  | MG/KG   |                    | 8/13/97          | AMR            |
| TOXAPHENE          | EPA-8080     | ND(<1)     | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1016           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1221           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1232           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1242           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1248           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1254           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1260           | EPA-8080     | ND(<0.2)   | MG/KG   |                    | 8/13/97          | AMR            |
| DALAPON            | EPA-8150 MOD | ND(<0.08)  | MG/KG   |                    | 8/8/97           | SAS            |
| DICAMBA            | EPA-8150 MOD | ND(<0.05)  | MG/KG   |                    | 8/8/97           | SAS            |
| DICHLOROPROP       | EPA-8150 MOD | ND(<0.05)  | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-D              | EPA-8150 MOD | ND(<0.04)  | MG/KG   |                    | 8/8/97           | SAS            |
| SILVEX(2,4,5-TP)   | EPA-8150 MOD | ND(<0.05)  | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4,5-T            | EPA-8150 MOD | ND(<0.07)  | MG/KG   |                    | 8/8/97           | SAS            |
| DINOSEB            | EPA-8150 MOD | ND(<0.07)  | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-DB             | EPA-8150 MOD | ND(<0.07)  | MG/KG   |                    | 8/8/97           | SAS            |
| MCPP               | EPA-8150 MOD | ND(<0.05)  | MG/KG   |                    | 8/8/97           | SAS            |
| MCPA               | EPA-8150 MOD | ND(<0.06)  | MG/KG   |                    | 8/8/97           | SAS            |
| ARSENIC            | EPA-7060     | 2.2        | MG/KG   |                    | 8/8/97           | JLB            |
| BARIUM             | EPA-7081     | 56         | MG/KG   |                    | 8/14/97          | JLB            |
| CADMIUM            | EPA-7130     | 0.5        | MG/KG   |                    | 8/8/97           | JLB            |
| CHROMIUM           | EPA-7190     | 36         | MG/KG   |                    | 8/8/97           | JLB            |
| LEAD               | EPA-7420     | 140        | MG/KG   |                    | 8/8/97           | JLB            |
| MERCURY            | EPA-7471MOD  | ND(<0.025) | MG/KG   |                    | 8/13/97          | JLB            |





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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 2  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-5 8/1/97 0915

### DATA RESULTS

| ANALYTE  | METHOD   | RESULTS* | UNITS**  | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------|----------|----------|----------|--------------------|------------------|----------------|
| SELENIUM | EPA-7740 | ND(<1)   | MG/KG    |                    | 8/13/97          | JLB            |
| SILVER   | EPA-7760 | ND(<0.4) | MG/KG    |                    | 8/8/97           | JLB            |
| SOIL PH  | EPA-9045 | 6.4      | PH UNITS |                    | 8/15/97          | JLB            |

\* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

\*\*\* ACTIONS LEVELS ARE PROVIDED ONLY WHEN PARAMETER DATA IS USED FOR A GENERALLY  
CONSISTENT APPLICATION. WHEN PROVIDED, THEY SHOULD BE USED AS GUIDELINES ONLY.  
THE APPROPRIATE REGULATORY DOCUMENT SHOULD BE CONSULTED BEFORE MAKING ANY  
DECISIONS BASED ON ANALYTICAL DATA.

APPROVED BY: C. J. [Signature]



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LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 3  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-7 8/1/97 0920

### AMENDED REPORT

### DATA RESULTS

| ANALYTE                   | METHOD     | RESULTS* | UNITS**   | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------------------------|------------|----------|-----------|--------------------|------------------|----------------|
| HCID-GAS RANGE            | WTPH-HCID  | ND(<20)  | MG/KG GAS |                    | 8/5/97           | AMR            |
| HCID-DIESEL RANGE         | WTPH-HCID  | ND(<50)  | MG/KG DSL |                    | 8/5/97           | AMR            |
| HCID-OIL RANGE            | WTPH-HCID  | >100     | MG/KG OIL |                    | 8/6/97           | AMR            |
| TPH-DIESEL RANGE          | WTPH-D EXT | ND(<25)  | MG/KG     | 200MG/KG           | 8/11/97          | AMR            |
| TPH-OIL RANGE             | WTPH-D EXT | 150      | MG/KG     | 200MG/KG           | 8/11/97          | AMR            |
| DICHLORODIFLUOROMETHANE   | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/5/97           | LRK            |
| CHLOROMETHANE             | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/5/97           | LRK            |
| VINYL CHLORIDE            | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/5/97           | LRK            |
| BROMOMETHANE              | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/5/97           | LRK            |
| CHLOROETHANE              | EPA-8260A  | ND(<20)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,1-DICHLOROETHENE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| TRICHLOROFLUOROMETHANE    | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| METHYLENE CHLORIDE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,1-DICHLOROETHANE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| TRANS-1,2-DICHLOROETHENE  | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| CIS-1,2-DICHLOROETHENE    | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| CHLOROFORM                | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,1,1-TRICHLOROETHANE     | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| CARBON TETRACHLORIDE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,2-DICHLOROETHANE        | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| TRICHLOROETHENE           | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,2-DICHLOROPROPANE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| BROMODICHLOROMETHANE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| TRANS-1,3-DICHLOROPROPENE | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| CIS-1,3-DICHLOROPROPENE   | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,1,2-TRICHLOROETHANE     | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| TETRACHLOROETHYLENE       | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| DIBROMOCHLOROMETHANE      | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| BROMOFORM                 | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| CHLOROBENZENE             | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |
| 1,1,2,2-TETRACHLOROETHANE | EPA-8260A  | ND(<10)  | UG/KG     |                    | 8/5/97           | LRK            |





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LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 3  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-7 8/1/97 0920

### AMENDED REPORT

### DATA RESULTS

| ANALYTE                       | METHOD    | RESULTS* | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|-------------------------------|-----------|----------|---------|--------------------|------------------|----------------|
| 1,2-DICHLOROBENZENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,3-DICHLOROBENZENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,4-DICHLOROBENZENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHYL)ETHER       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENOL                        | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLOROPHENOL                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,3-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,4-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2-DICHLOROBENZENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| BENZYL ALCOHOL/2-METHYLPHENOL | EPA-8270  | ND(<200) | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROISOPROPYL)ETHER   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROETHANE              | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSO-DI-N-PROPYLAMINE    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-METHYLPHENOL                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| NITROBENZENE                  | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| ISOPHORONE                    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROPHENOL                 | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DIMETHYLPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| BENZOIC ACID                  | EPA-8270  | ND(<500) | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHOXY)METHANE    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DICHLOROPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2,4-TRICHLOROBENZENE        | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| NAPHTHALENE                   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROANILINE               | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBUTADIENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLORO-3-METHYLPHENOL       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-METHYLNAPHTHALENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROCYCLOPENTADIENE     | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,6-TRICHLOROPHENOL         | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,5-TRICHLOROPHENOL         | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLORONAPHTHALENE           | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROANILINE                | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |





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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 3  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-7 8/1/97 0920

### AMENDED REPORT

### DATA RESULTS

| ANALYTE                    | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| ACENAPHTHYLENE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIMETHYLPHTHALATE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,6-DINITROTOLUENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHATHENE              | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZOFURAN               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROTOLUENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROPHENOL              | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROPHENYL-PHENYLETHER | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIETHYLPHTHALATE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4,6-DINITRO-2-METHYLPHENOL | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSODIPHENYLAMINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-BROMOPHENYL-PHENYLETHER  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBENZENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PENTACHLOROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENANTHRENE               | EPA-8270 | 210       | UG/KG   |                    | 8/5/97           | LRK            |
| ANTHRACENE                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CARBAZOLE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-BUTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORANTHENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PYRENE                     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BUTYLBENZYLPHTHALATE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3,3'-DICHLOROBENZIDINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]ANTHRACENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CHRYSENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-ETHYLHEXYL)PHTHALATE | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-OCTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[B]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[K]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]PYRENE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |



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CLIENT: EARTH CONSULTANTS INC.  
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DATE: 8/21/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 3  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-7 8/1/97 0920

### AMENDED REPORT

### DATA RESULTS

| ANALYTE                | METHOD       | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|------------------------|--------------|-----------|---------|--------------------|------------------|----------------|
| INDENO[1,2,3-CD]PYRENE | EPA-8270     | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZ[A,H]ANTHRACENE  | EPA-8270     | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[G,H,I]PERYLENE   | EPA-8270     | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| a-BHC                  | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| g-BHC                  | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| b-BHC                  | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR             | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| d-BHC                  | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ALDRIN                 | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR EPOXIDE     | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| CHLORDANE              | EPA-8080     | ND(<0.04) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN I           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' DDE               | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| DIELDRIN               | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN                 | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' -DDD              | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN II          | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4'-DDT               | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN ALDEHYDE        | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN SULFATE     | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| METHOXYCHLOR           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| TOXAPHENE              | EPA-8080     | ND(<1)    | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1016               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1221               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1232               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1242               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1248               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1254               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1260               | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| DALAPON                | EPA-8150 MOD | ND(<0.08) | MG/KG   |                    | 8/8/97           | SAS            |
| DICAMBA                | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |





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1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 3  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP2-7 8/1/97 0920

### AMENDED REPORT

### DATA RESULTS

| ANALYTE          | METHOD       | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|------------------|--------------|-----------|---------|--------------------|------------------|----------------|
| DICHLOROPROP     | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-D            | EPA-8150 MOD | ND(<0.04) | MG/KG   |                    | 8/8/97           | SAS            |
| SILVEX(2,4,5-TP) | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4,5-T          | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| DINOSEB          | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-DB           | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPD             | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPA             | EPA-8150 MOD | ND(<0.06) | MG/KG   |                    | 8/8/97           | SAS            |
| ARSENIC          | EPA-7060     | 3.4       | MG/KG   |                    | 8/8/97           | JLB            |
| BARIUM           | EPA-7081     | 61        | MG/KG   |                    | 8/14/97          | JLB            |
| CADMIUM          | EPA-7130     | 0.3       | MG/KG   |                    | 8/8/97           | JLB            |
| CHROMIUM         | EPA-7190     | 72        | MG/KG   |                    | 8/8/97           | JLB            |
| LEAD             | EPA-7420     | ND(<8)    | MG/KG   |                    | 8/20/97          | JLB            |
| MERCURY          | EPA-7471MOD  | ND(<.025) | MG/KG   |                    | 8/13/97          | JLB            |
| SELENIUM         | EPA-7740     | ND(<1)    | MG/KG   |                    | 8/13/97          | JLB            |
| SILVER           | EPA-7760     | ND(<0.4)  | MG/KG   |                    | 8/8/97           | JLB            |

\* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

\*\*\* ACTIONS LEVELS ARE PROVIDED ONLY WHEN PARAMETER DATA IS USED FOR A GENERALLY  
CONSISTENT APPLICATION. WHEN PROVIDED, THEY SHOULD BE USED AS GUIDELINES ONLY.  
THE APPROPRIATE REGULATORY DOCUMENT SHOULD BE CONSULTED BEFORE MAKING ANY  
DECISIONS BASED ON ANALYTICAL DATA

APPROVED BY: CPJ





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LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

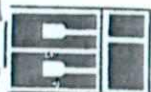
DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 4  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP3-6 8/1/97 0945

### DATA RESULTS

| ANALYTE                   | METHOD    | RESULTS* | UNITS**   | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------------------------|-----------|----------|-----------|--------------------|------------------|----------------|
| HCID-GAS RANGE            | WTPH-HCID | ND(<20)  | MG/KG GAS |                    | 8/5/97           | AMR            |
| HCID-DIESEL RANGE         | WTPH-HCID | ND(<50)  | MG/KG DSL |                    | 8/5/97           | AMR            |
| HCID-OIL RANGE            | WTPH-HCID | ND(<100) | MG/KG OIL |                    | 8/6/97           | AMR            |
| DICHLORODIFLUOROMETHANE   | EPA-8260A | ND(<20)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CHLOROMETHANE             | EPA-8260A | ND(<20)  | UG/KG     |                    | 8/5/97           | Lrk            |
| VINYL CHLORIDE            | EPA-8260A | ND(<20)  | UG/KG     |                    | 8/5/97           | Lrk            |
| BROMOMETHANE              | EPA-8260A | ND(<20)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CHLOROETHANE              | EPA-8260A | ND(<20)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,1-DICHLOROETHENE        | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| TRICHLOROFLUOROMETHANE    | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| METHYLENE CHLORIDE        | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,1-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| TRANS-1,2-DICHLOROETHENE  | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CIS-1,2-DICHLOROETHENE    | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CHLOROFORM                | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,1,1-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CARBON TETRACHLORIDE      | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,2-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| TRICHLOROETHENE           | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,2-DICHLOROPROPANE       | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| BROMODICHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| TRANS-1,3-DICHLOROPROPENE | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CIS-1,3-DICHLOROPROPENE   | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,1,2-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| TETRACHLOROETHYLENE       | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| DIBROMOCHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| BROMOFORM                 | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| CHLOROBENZENE             | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,1,2,2-TETRACHLOROETHANE | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,2-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,3-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| 1,4-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG     |                    | 8/5/97           | Lrk            |
| BIS(2-CHLOROETHYL)ETHER   | EPA-8270  | ND(<100) | UG/KG     |                    | 8/5/97           | Lrk            |



CCI  
ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 4  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP3-6 8/1/97 0945

### DATA RESULTS

| ANALYTE                       | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|-------------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| PHENOL                        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLOROPHENOL                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,3-DICHLOROBENZENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,4-DICHLOROBENZENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2-DICHLOROBENZENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZYL ALCOHOL/2-METHYLPHENOL | EPA-8270 | ND(<200)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROISOPROPYL)ETHER   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROETHANE              | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSO-DI-N-PROPYLAMINE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-METHYLPHENOL                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NITROBENZENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ISOPHORONE                    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROPHENOL                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DIMETHYLPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZOIC ACID                  | EPA-8270 | ND(<500)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHOXY)METHANE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DICHLOROPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2,4-TRICHLOROBENZENE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NAPHTHALENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROANILINE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBUTADIENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLORO-3-METHYLPHENOL       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-METHYLNAPHTHALENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROCYCLOPENTADIENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,6-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,5-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLORONAPHTHALENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHYLENE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIMETHYLPHTHALATE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,6-DINITROTOLUENE            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROPHENOL             | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZOFURAN                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |



CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 4  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP3-6 8/1/97 0945

DATA RESULTS

| ANALYTE                    | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| 2,4-DINITROTOLUENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROPHENOL              | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROPHENYL-PHENYLETHER | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIETHYLPHTHALATE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4,6-DINITRO-2-METHYLPHENOL | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSODIPHENYLAMINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-BROMOPHENYL-PHENYLETHER  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBENZENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PENTACHLOROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENANTHRENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ANTHRACENE                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CARBAZOLE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-BUTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORANTHENE               | EPA-8270 | 200       | UG/KG   |                    | 8/5/97           | LRK            |
| PYRENE                     | EPA-8270 | 210       | UG/KG   |                    | 8/5/97           | LRK            |
| BUTYLBENZYLPHTHALATE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3,3'-DICHLOROBENZIDINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]ANTHRACENE         | EPA-8270 | 100       | UG/KG   |                    | 8/5/97           | LRK            |
| CHRYSENE                   | EPA-8270 | 100       | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-ETHYLHEXYL)PHTHALATE | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-OCTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[B]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[K]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]PYRENE             | EPA-8270 | 110       | UG/KG   |                    | 8/5/97           | LRK            |
| INDENO[1,2,3-CD]PYRENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZ[A,H]ANTHRACENE      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[G,H,I]PERYLENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| a-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| g-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| b-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR                 | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| d-BHC                      | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |





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### CERTIFICATE OF ANALYSIS

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1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 4  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP3-6 8/1/97 0945

### DATA RESULTS

| ANALYTE            | METHOD       | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|--------------------|--------------|-----------|---------|--------------------|------------------|----------------|
| ALDRIN             | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR EPOXIDE | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| CHLORDANE          | EPA-8080     | ND(<0.04) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN I       | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' DDE           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| DIELDRIN           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN             | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' -DDD          | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN II      | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4'-DDT           | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN ALDEHYDE    | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN SULFATE | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| METHOXYCHLOR       | EPA-8080     | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| TOXAPHENE          | EPA-8080     | ND(<1)    | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1016           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1221           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1232           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1242           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1248           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1254           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1260           | EPA-8080     | ND(<0.2)  | MG/KG   |                    | 8/13/97          | AMR            |
| DALAPON            | EPA-8150 MOD | ND(<0.08) | MG/KG   |                    | 8/8/97           | SAS            |
| DICAMBA            | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| DICHLOROPROP       | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-D              | EPA-8150 MOD | ND(<0.04) | MG/KG   |                    | 8/8/97           | SAS            |
| SILVEX(2,4,5-TP)   | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4,5-T            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| DINOSEB            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-DB             | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPPP              | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPA               | EPA-8150 MOD | ND(<0.06) | MG/KG   |                    | 8/8/97           | SAS            |
| ARSENIC            | EPA-7060     | 2.9       | MG/KG   |                    | 8/8/97           | JLB            |
| BARIUM             | EPA-7081     | 85        | MG/KG   |                    | 8/14/97          | JLB            |



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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: 4  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: TP3-6 8/1/97 0945

### DATA RESULTS

| ANALYTE  | METHOD      | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------|-------------|-----------|---------|--------------------|------------------|----------------|
| CADMIUM  | EPA-7130    | ND(<0.2)  | MG/KG   |                    | 8/8/97           | JLB            |
| CHROMIUM | EPA-7190    | 13        | MG/KG   |                    | 8/8/97           | JLB            |
| LEAD     | EPA-7420    | 7.1       | MG/KG   |                    | 8/8/97           | JLB            |
| MERCURY  | EPA-7471MOD | ND(<.025) | MG/KG   |                    | 8/13/97          | JLB            |
| SELENIUM | EPA-7740    | ND(<1)    | MG/KG   |                    | 8/13/97          | JLB            |
| SILVER   | EPA-7760    | ND(<0.4)  | MG/KG   |                    | 8/8/97           | JLB            |

\* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

\*\*\* ACTIONS LEVELS ARE PROVIDED ONLY WHEN PARAMETER DATA IS USED FOR A GENERALLY  
CONSISTENT APPLICATION. WHEN PROVIDED, THEY SHOULD BE USED AS GUIDELINES ONLY.  
THE APPROPRIATE REGULATORY DOCUMENT SHOULD BE CONSULTED BEFORE MAKING ANY  
DECISIONS BASED ON ANALYTICAL DATA

APPROVED BY: C12





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LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: BLK  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260A, 8270, 8080, 8150

### DATA RESULTS

| ANALYTE                   | METHOD    | RESULTS* | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------------------------|-----------|----------|---------|--------------------|------------------|----------------|
| DICHLORODIFLUOROMETHANE   | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | LRK            |
| CHLOROMETHANE             | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | LRK            |
| VINYL CHLORIDE            | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | LRK            |
| BROMOMETHANE              | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | LRK            |
| CHLOROETHANE              | EPA-8260A | ND(<20)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,1-DICHLOROETHENE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| TRICHLOROFLUOROMETHANE    | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| METHYLENE CHLORIDE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,1-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| TRANS-1,2-DICHLOROETHENE  | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| CIS-1,2-DICHLOROETHENE    | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| CHLOROFORM                | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,1,1-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| CARBON TETRACHLORIDE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROETHANE        | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| TRICHLOROETHENE           | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROPROPANE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| BROMODICHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| TRANS-1,3-DICHLOROPROPENE | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| CIS-1,3-DICHLOROPROPENE   | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,1,2-TRICHLOROETHANE     | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| TETRACHLOROETHYLENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| DIBROMOCHLOROMETHANE      | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| BROMOFORM                 | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| CHLOROBENZENE             | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,1,2,2-TETRACHLOROETHANE | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,2-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,3-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| 1,4-DICHLOROBENZENE       | EPA-8260A | ND(<10)  | UG/KG   |                    | 8/4/97           | LRK            |
| BIS(2-CHLOROETHYL)ETHER   | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENOL                    | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLOROPHENOL            | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,3-DICHLOROBENZENE       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |
| 1,4-DICHLOROBENZENE       | EPA-8270  | ND(<100) | UG/KG   |                    | 8/5/97           | LRK            |





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CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
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DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: BLK  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260A, 8270, 8080, 8150

### DATA RESULTS

| ANALYTE                       | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|-------------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| 1,2-DICHLOROBENZENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZYL ALCOHOL/2-METHYLPHENOL | EPA-8270 | ND(<200)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROISOPROPYL)ETHER   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROETHANE              | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSO-DI-N-PROPYLAMINE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-METHYLPHENOL                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NITROBENZENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ISOPHORONE                    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROPHENOL                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DIMETHYLPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZOIC ACID                  | EPA-8270 | ND(<500)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-CHLOROETHOXY)METHANE    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DICHLOROPHENOL            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 1,2,4-TRICHLOROBENZENE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| NAPHTHALENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROANILINE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBUTADIENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLORO-3-METHYLPHENOL       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-METHYLNAPHTHALENE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROCYCLOPENTADIENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,6-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4,5-TRICHLOROPHENOL         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-CHLORONAPHTHANLENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHYLENE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIMETHYLPHTHALATE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,6-DINITROTOLUENE            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ACENAPHTHENE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3-NITROANILINE                | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROPHENOL             | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZOFURAN                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 2,4-DINITROTOLUENE            | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROPHENOL                 | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORENE                      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-CHLOROPHENYL-PHENYLETHER    | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |

CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: BLK  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260A, 8270, 8080, 8150

DATA RESULTS

| ANALYTE                    | METHOD   | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|----------------------------|----------|-----------|---------|--------------------|------------------|----------------|
| DIETHYLPHTHALATE           | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-NITROANILINE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4,6-DINITRO-2-METHYLPHENOL | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| N-NITROSODIPHENYLAMINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 4-BROMOPHENYL-PHENYLETHER  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| HEXACHLOROBENZENE          | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PENTACHLOROPHENOL          | EPA-8270 | ND(<1000) | UG/KG   |                    | 8/5/97           | LRK            |
| PHENANTHRENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| ANTHRACENE                 | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CARBAZOLE                  | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-BUTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| FLUORANTHENE               | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| PYRENE                     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BUTYLBENZYLPHTHALATE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| 3,3'-DICHLOROBENZIDINE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]ANTHRACENE         | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| CHRYSENE                   | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BIS(2-ETHYLHEXYL)PHTHALATE | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DI-N-OCTYLPHTHALATE        | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[B]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[K]FLUORANTHENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[A]PYRENE             | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| INDENO[1,2,3-CD]PYRENE     | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| DIBENZ[A,H]ANTHRACENE      | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| BENZO[G,H,I]PERYLENE       | EPA-8270 | ND(<100)  | UG/KG   |                    | 8/5/97           | LRK            |
| a-BHC                      | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| g-BHC                      | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| b-BHC                      | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR                 | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| d-BHC                      | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| ALDRIN                     | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| HEPTACHLOR EPOXIDE         | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| CHLORDANE                  | EPA-8080 | ND(<0.02) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN I               | EPA-8080 | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |





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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: BLK  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260A, 8270, 8080, 8150

### DATA RESULTS

| ANALYTE            | METHOD       | RESULTS*  | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|--------------------|--------------|-----------|---------|--------------------|------------------|----------------|
| 4,4' DDE           | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| DIELDRIN           | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN             | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4' -DDD          | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN II      | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| 4,4'-DDT           | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDRIN ALDEHYDE    | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| ENDOSULFAN SULFATE | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| METHOXYCHLOR       | EPA-8080     | ND(<0.01) | MG/KG   |                    | 8/13/97          | AMR            |
| TOXAPHENE          | EPA-8080     | ND(<.5)   | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1016           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1221           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1232           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1242           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1248           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1254           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| PCB-1260           | EPA-8080     | ND(<0.1)  | MG/KG   |                    | 8/13/97          | AMR            |
| DALAPON            | EPA-8150 MOD | ND(<0.08) | MG/KG   |                    | 8/8/97           | SAS            |
| DICAMBA            | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| DICHLOROPROP       | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-D              | EPA-8150 MOD | ND(<0.04) | MG/KG   |                    | 8/8/97           | SAS            |
| SILVEX(2,4,5-TP)   | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4,5-T            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| DINOSEB            | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| 2,4-DB             | EPA-8150 MOD | ND(<0.07) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPP               | EPA-8150 MOD | ND(<0.05) | MG/KG   |                    | 8/8/97           | SAS            |
| MCPA               | EPA-8150 MOD | ND(<0.06) | MG/KG   |                    | 8/8/97           | SAS            |

\* "ND" INDICATES ANALYTE NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES

\*\* UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS





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CERTIFICATE OF ANALYSIS

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CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003  
CCIL SAMPLE #: BLK  
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1  
CLIENT SAMPLE ID: METHOD BLANK FOR EPA-8260A, 8270, 8080, 8150

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DATA RESULTS

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| ANALYTE | METHOD | RESULTS* | UNITS** | ACTION<br>LEVEL*** | ANALYSIS<br>DATE | ANALYSIS<br>BY |
|---------|--------|----------|---------|--------------------|------------------|----------------|
|---------|--------|----------|---------|--------------------|------------------|----------------|

\*\*\* ACTIONS LEVELS ARE PROVIDED ONLY WHEN PARAMETER DATA IS USED FOR A GENERALLY  
CONSISTENT APPLICATION. WHEN PROVIDED, THEY SHOULD BE USED AS GUIDELINES ONLY.  
THE APPROPRIATE REGULATORY DOCUMENT SHOULD BE CONSULTED BEFORE MAKING ANY  
DECISIONS BASED ON ANALYTICAL DATA

APPROVED BY: CPJ



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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003

CLIENT CONTACT: JOE NESSEL

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT PROJECT ID: E-7816-1

### QUALITY CONTROL RESULTS

#### SURROGATE RECOVERY

| CCIL SAMPLE ID    | ANALYTE    | SUR ID               | % RECV |
|-------------------|------------|----------------------|--------|
| 708003-01         | WTPH-HCID  | BCB                  | 112    |
| 708003-01         | WTPH-HCID  | C25                  | 120    |
| 708003-01(4 TO 1) | WTPH-HCID  | C25                  | 107    |
| 708003-01         | WTPH-D EXT | C25                  | 117    |
| 708003-01         | EPA-8260A  | 1,2-DCE-d4           | 95     |
| 708003-01         | EPA-8260A  | 4-BFB                | 83     |
| 708003-01         | EPA-8270   | 2-FLUOROPHENOL       | 75     |
| 708003-01         | EPA-8270   | PHENOL-d5            | 82     |
| 708003-01         | EPA-8270   | NITROBENZENE-d5      | 85     |
| 708003-01         | EPA-8270   | 2-FLUOROBIPHENYL     | 88     |
| 708003-01         | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 90     |
| 708003-01         | EPA-8270   | TERPHENYL-d14        | 77     |
| 708003-01         | EPA-8080   | TCMX                 | 60     |
| 708003-01         | EPA-8080   | DBC                  | 73     |
| 708003-01         | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 77     |
| 708003-02         | EPA-8260A  | 1,2-DCE-d4           | 114    |
| 708003-02         | EPA-8260A  | 4-BFB                | 77     |
| 708003-02         | EPA-8270   | 2-FLUOROPHENOL       | 88     |
| 708003-02         | EPA-8270   | PHENOL-d5            | 92     |
| 708003-02         | EPA-8270   | NITROBENZENE-d5      | 93     |
| 708003-02         | EPA-8270   | 2-FLUOROBIPHENYL     | 96     |
| 708003-02         | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 91     |
| 708003-02         | EPA-8270   | TERPHENYL-d14        | 79     |
| 708003-02         | EPA-8080   | TCMX                 | 67     |
| 708003-02         | EPA-8080   | DBC                  | 76     |
| 708003-02         | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 79     |
| 708003-03         | WTPH-HCID  | BCB                  | 127    |
| 708003-03         | WTPH-HCID  | C25                  | 143    |
| 708003-03(4 TO 1) | WTPH-HCID  | C25                  | 135    |
| 708003-03         | WTPH-D EXT | C25                  | 121    |



### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTING  
1808 180TH AVE  
BELLEVUE, WA 98003

DATE: 8/15/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE VICK

CLIENT PROJECT ID: 708003

### QUALITY CONTROL RESULTS

#### SURROGATE RECOVERY

| CCIL SAMPLE ID     | SUR ID               | % RECV |
|--------------------|----------------------|--------|
| 708003-03          | 1,2-DCE-d4           | 84     |
| 708003-03          | 4-BFB                | 93     |
| 708003-03          | 2-FLUOROPHENOL       | 83     |
| 708003-03          | PHENOL-d5            | 79     |
| 708003-03          | NITROBENZENE-d5      | 90     |
| 708003-03          | 2-FLUOROBIPHENYL     | 92     |
| 708003-03          | 2,4,6-TRIBROMOPHENOL | 88     |
| 708003-03          | TERPHENYL-d14        | 100    |
| 708003-03          | TCMX                 | 73     |
| 708003-03          | DBC                  | 67     |
| 708003-03          | 2,4,6-TRIBROMOPHENOL | 75     |
| 708003-04          | BCB                  | 123    |
| 708003-04          | C25                  | 138    |
| 708003-04 (4 TO 1) | C25                  | 115    |
| 708003-04          | 1,2-DCE-d4           | 86     |
| 708003-04          | 4-BFB                | 88     |
| 708003-04          | 2-FLUOROPHENOL       | 83     |
| 708003-04          | PHENOL-d5            | 91     |
| 708003-04          | NITROBENZENE-d5      | 90     |
| 708003-04          | 2-FLUOROBIPHENYL     | 89     |
| 708003-04          | 2,4,6-TRIBROMOPHENOL | 89     |
| 708003-04          | TERPHENYL-d14        | 95     |
| 708003-04          | TCMX                 | 62     |
| 708003-04          | DBC                  | 63     |
| 708003-04          | 2,4,6-TRIBROMOPHENOL | 79     |





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CERTIFICATE OF ANALYSIS

---

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

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QUALITY CONTROL RESULTS

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SURROGATE RECOVERY

| CCIL SAMPLE ID    | ANALYTE   | SUR ID               | % RECV |
|-------------------|-----------|----------------------|--------|
| 708003-03         | EPA-8260A | 1,2-DCE-d4           | 84     |
| 708003-03         | EPA-8260A | 4-BFB                | 93     |
| 708003-03         | EPA-8270  | 2-FLUOROPHENOL       | 83     |
| 708003-03         | EPA-8270  | PHENOL-d5            | 79     |
| 708003-03         | EPA-8270  | NITROBENZENE-d5      | 90     |
| 708003-03         | EPA-8270  | 2-FLUOROBIPHENYL     | 92     |
| 708003-03         | EPA-8270  | 2,4,6-TRIBROMOPHENOL | 88     |
| 708003-03         | EPA-8270  | TERPHENYL-d14        | 100    |
| 708003-03         | EPA-8080  | TCMX                 | 73     |
| 708003-03         | EPA-8080  | DBC                  | 67     |
| 708003-03         | EPA-8150  | 2,4,6-TRIBROMOPHENOL | 75     |
| 708003-04         | WTPH-HCID | BCB                  | 123    |
| 708003-04         | WTPH-HCID | C25                  | 138    |
| 708003-04(4 TO 1) | WTPH-HCID | C25                  | 115    |
| 708003-04         | EPA-8260A | 1,2-DCE-d4           | 86     |
| 708003-04         | EPA-8260A | 4-BFB                | 88     |
| 708003-04         | EPA-8270  | 2-FLUOROPHENOL       | 83     |
| 708003-04         | EPA-8270  | PHENOL-d5            | 91     |
| 708003-04         | EPA-8270  | NITROBENZENE-d5      | 90     |
| 708003-04         | EPA-8270  | 2-FLUOROBIPHENYL     | 89     |
| 708003-04         | EPA-8270  | 2,4,6-TRIBROMOPHENOL | 89     |
| 708003-04         | EPA-8270  | TERPHENYL-d14        | 95     |
| 708003-04         | EPA-8080  | TCMX                 | 62     |
| 708003-04         | EPA-8080  | DBC                  | 63     |
| 708003-04         | EPA-8150  | 2,4,6-TRIBROMOPHENOL | 79     |



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### CERTIFICATE OF ANALYSIS

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1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

### QUALITY CONTROL RESULTS

#### SURROGATE RECOVERY

| CCIL SAMPLE ID | ANALYTE | SUR ID | % RECV |
|----------------|---------|--------|--------|
|----------------|---------|--------|--------|

#### BLANK AND DUPLICATE RESULTS

| METHOD             | BLK RESULT       | ASSOC SMPLS     | DUP RESULT | ORG RESULT | %RDP | ASSOC SMPLS |
|--------------------|------------------|-----------------|------------|------------|------|-------------|
| WTPH-HCID(GAS )    | ND(<20)          | 708003-01 TO 04 | ND(<20)    | ND(<20)    | **** | SAME        |
| WTPH-HCID(DSL)     | ND(<50)          | 708003-01 TO 04 | ND(<50)    | ND(<50)    | **** | SAME        |
| WTPH-HCID(OIL)     | ND(<100)         | 708003-01 TO 04 | >100       | ND(<100)   | **** | SAME        |
| WTPH-D EXT (DSL)   | ND(<25)          | 708003-01 TO 04 | 20000      | 18000      | 11   | SAME        |
| WTPH-D EXT (OIL)   | ND(<50)          | 708003-01 TO 04 | ND(<5000)  | ND(<5000)  | **** | SAME        |
| EPA-1311/7060 (AS) | ND(<0.3)         | 708003-01 TO 04 | 2.3        | 2.1        | 10   | SAME        |
| EPA-1311/7081 (BA) | ND(<0.4)         | 708003-01 TO 04 | 71         | 63         | 12   | SAME        |
| EPA-1311/7130 (CD) | ND(<0.2)         | 708003-01 TO 04 | 0.3        | 0.3        | **** | SAME        |
| EPA-1311/7190 (CR) | ND(<2)           | 708003-01 TO 04 | 17         | 17         | 0    | SAME        |
| EPA-1311/7420 (PB) | ND(<6)           | 708003-01 TO 04 | 63         | 60         | 5    | SAME        |
| EPA-1311/7470 (HG) | ND(<.025)        | 708003-01 TO 04 | ND(<.025)  | ND(<.025)  | **** | SAME        |
| EPA-1311/7740 (SE) | ND(<1)           | 708003-01 TO 04 | ND(<1)     | ND(<1)     | **** | SAME        |
| EPA-1311/7760 (AG) | ND(<0.4)         | 708003-01 TO 04 | ND(<0.4)   | ND(<0.4)   | **** | SAME        |
| EPA-8260A          | SEE BLANK REPORT |                 |            |            |      |             |
| EPA-8270           | SEE BLANK REPORT |                 |            |            |      |             |
| EPA-8080           | SEE BLANK REPORT |                 |            |            |      |             |
| EPA-8150           | SEE BLANK REPORT |                 |            |            |      |             |

#### SPIKE/ SPIKE DUPLICATE RESULTS

| METHOD    | SPIKE ID           | ASSOCIATED<br>SAMPLES | % SPIKE<br>RECOVERY | % SPIKE DUP<br>RECOVERY | REL % DIFF |
|-----------|--------------------|-----------------------|---------------------|-------------------------|------------|
| EPA-8260A | 1,1-DICHLOROETHENE | 708003-01 TO 04       | 76                  | 75                      | 1          |
| EPA-8260A | TRICHLOROETHENE    | 708003-01 TO 04       | 84                  | 78                      | 7          |
| EPA-8260A | CHLOROBENZENE      | 708003-01 TO 04       | 88                  | 83                      | 7          |



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ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

### QUALITY CONTROL RESULTS

#### SURROGATE RECOVERY

| CCIL SAMPLE ID     | ANALYTE                    | SUR ID          | % RECV      |
|--------------------|----------------------------|-----------------|-------------|
| EPA-8270           | PHENOL                     | 708003-01 TO 04 | 88 89 1     |
| EPA-8270           | 2-CHLOROPHENOL             | 708003-01 TO 04 | 88 88 0     |
| EPA-8270           | 1,4-DICHLOROBENZENE        | 708003-01 TO 04 | 85 83 2     |
| EPA-8270           | N-NITROSO-DI-N-PROPYLAMINE | 708003-01 TO 04 | 101 97 4    |
| EPA-8270           | 1,2,4-TRICHLOROBENZENE     | 708003-01 TO 04 | 84 84 0     |
| EPA-8270           | 4-CHLORO-3-METHYLPHENOL    | 708003-01 TO 04 | 88 87 1     |
| EPA-8270           | ACENAPHTHENE               | 708003-01 TO 04 | 89 87 2     |
| EPA-8270           | 2,4-DINITROTOLUENE         | 708003-01 TO 04 | 82 76 7     |
| EPA-8270           | 4-NITROPHENOL              | 708003-01 TO 04 | 76 65 16    |
| EPA-8270           | PENTACHLOROPHENOL          | 708003-01 TO 04 | 74 71 3     |
| EPA-8270           | PYRENE                     | 708003-01 TO 04 | 119 123 3   |
| EPA-8080           | GAMMA-BHC                  | 708003-01 TO 04 | 87 84 4     |
| EPA-8080           | HEPTACHLOR                 | 708003-01 TO 04 | 88 100 12   |
| EPA-8080           | ALDRIN                     | 708003-01 TO 04 | 85 84 1     |
| EPA-8080           | DIELDRIN                   | 708003-01 TO 04 | 79 79 0     |
| EPA-8080           | ENDRIN                     | 708003-01 TO 04 | 96 91 5     |
| EPA-8080           | 4,4-DDT                    | 708003-01 TO 04 | 90 85 5     |
| EPA-8150           | DALAPON                    | 708003-01 TO 04 | 48 61 24    |
| EPA-8150           | DICAMBA                    | 708003-01 TO 04 | 70 84 18    |
| EPA-8150           | 2,4-D                      | 708003-01 TO 04 | 73 85 15    |
| EPA-8150           | SILVEX(2,4,5-TP)           | 708003-01 TO 04 | 77 94 20    |
| EPA-8150           | MCPA                       | 708003-01 TO 04 | 72 87 19    |
| EPA-1311/7060 (AS) | ARSENIC                    | 708003-01 TO 04 | 102 N/A N/A |
| EPA-1311/7081 (BA) | BARIUM                     | 708003-01 TO 04 | 94 N/A N/A  |
| EPA-1311/7130 (CD) | CADMIUM                    | 708003-01 TO 04 | 113 N/A N/A |
| EPA-1311/7190 (CR) | CHROME                     | 708003-01 TO 04 | 98 N/A N/A  |
| EPA-1311/7420 (PB) | LEAD                       | 708003-01 TO 04 | 99 N/A N/A  |
| EPA-1311/7470 (HG) | MERCURY                    | 708003-01 TO 04 | 110 N/A N/A |
| EPA-1311/7740 (SE) | SELENIUM                   | 708003-01 TO 04 | 100 N/A N/A |
| EPA-1311/7760 (AG) | SILVER                     | 708003-01 TO 04 | 111 N/A N/A |





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LABORATORIES, INC.

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CERTIFICATE OF ANALYSIS

---

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1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/15/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

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QUALITY CONTROL RESULTS

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SURROGATE RECOVERY

CCIL SAMPLE ID

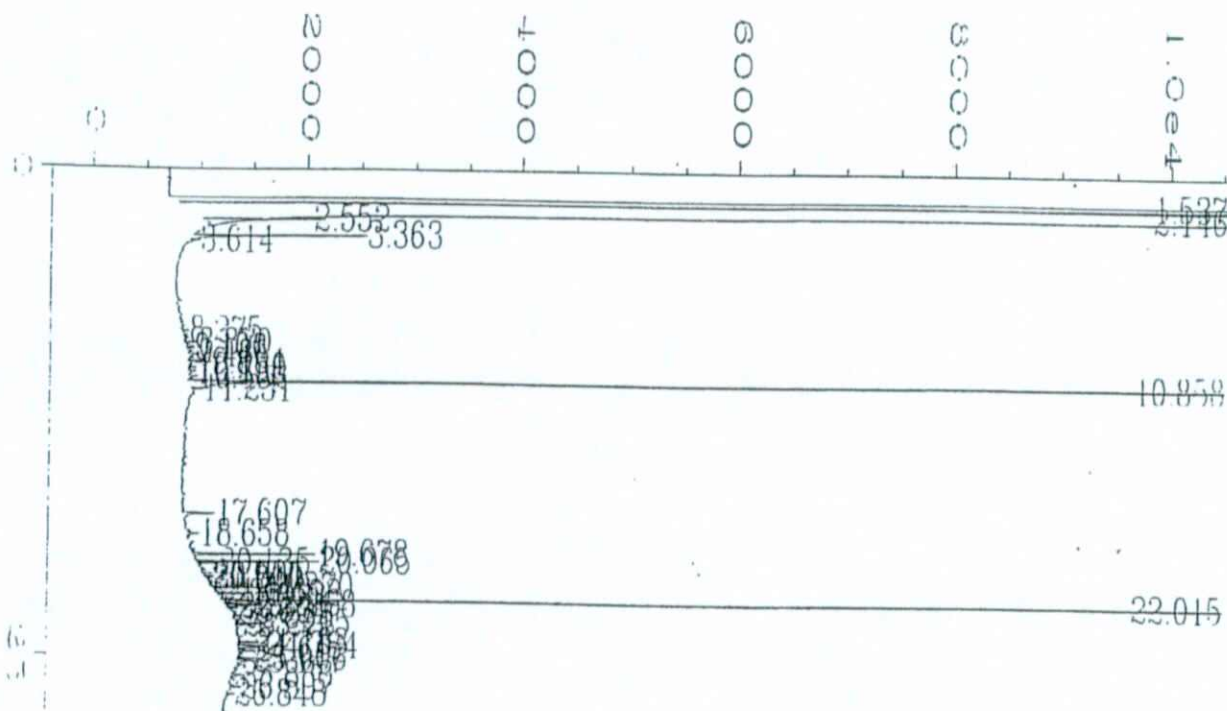
ANALYTE

SUR ID

% RECV

\* RESULT OUTSIDE OF CONTROL LIMITS DUE TO HIGH LEVEL OF ANALYTE IN SAMPLE  
\*\*\*\* %RPD NOT REPORTED FOR VALUES <X5 THE REPORTING LIMIT

APPROVED BY: 



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17080501\007F0301.D  
 Operator : AMR  
 Instrument : GC SYS 1  
 Sample Name : 708003-1  
 Run Time Bar Code:  
 Acquired on : 05 Aug 97 01:09 PM  
 Report Created on: 05 Aug 97 01:51 PM  
 Last Recalib on : 20 MAY 97 07:39 AM  
 Multiplier : 1

Page Number : 1  
 Vial Number : 7  
 Injection Number : 1  
 Sequence Line : 3  
 Instrument Method: TPHHCID.MTH  
 Analysis Method : TPHHCID.MTH  
 Sample Amount : 0  
 STD Amount : 28.045

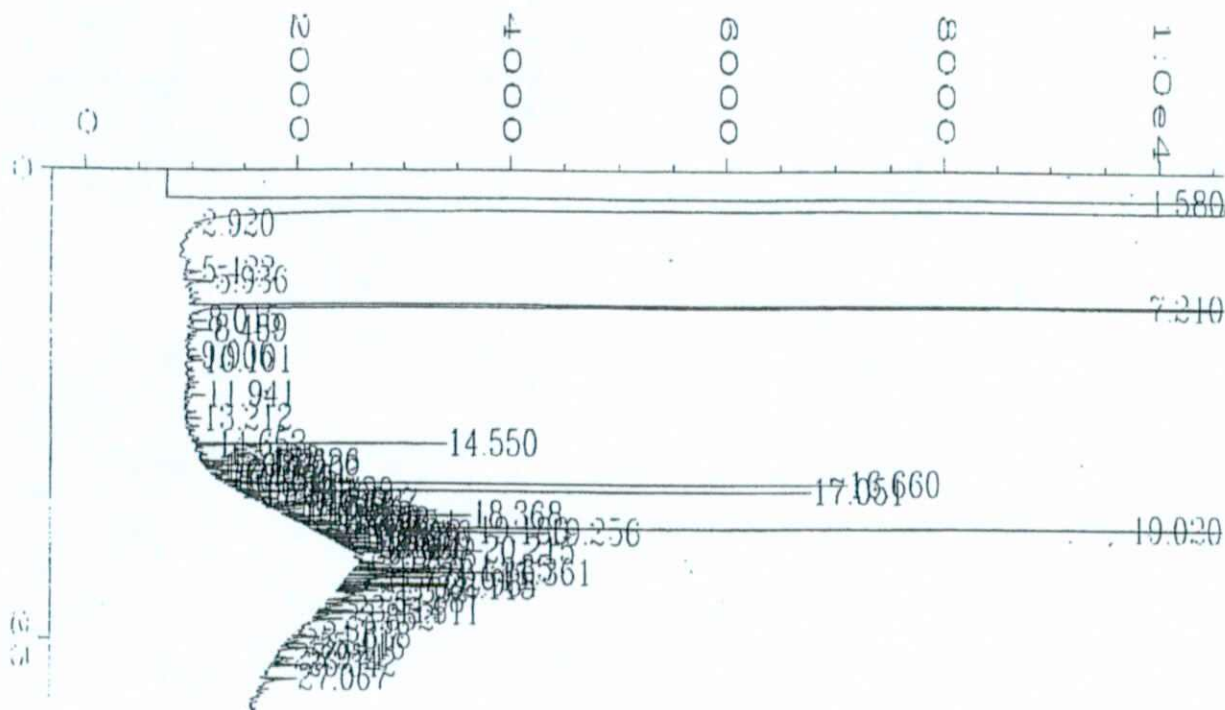
Sig. 1 in D:\HPCHEM\1\DATA\17080501\007F0301.D

| Ret Time | Area  | Type | Width | Ref# | ug/ml  | Name               |
|----------|-------|------|-------|------|--------|--------------------|
| 10.858   | 49474 | PV   | 0.026 | 1-R  | 28.045 | Bromochlorobenzene |
| 22.015   | 25350 | VV   | 0.024 | 1    | 6.057  | Pentacosane        |

125 = 112%  
 15 = 120%

| Time Reference Peak | Expected RT | Actual RT | Difference |
|---------------------|-------------|-----------|------------|
| 1                   | 10.854      | 10.858    | 0.004      |

Gas = ND < 20 mg/kg  
 Diesel = ND < 50 mg/kg  
 AMR 8797



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17080601\022F1001.D  
 Operator : AMR Page Number : 1  
 Instrument : GC SYS 1 Vial Number : 22  
 Sample Name : 708003-1 x4 Injection Number : 1  
 Run Time Bar Code: Sequence Line : 10  
 Acquired on : 06 Aug 97 09:47 PM Instrument Method: TPHHCID2.MT  
 Report Created on: 06 Aug 97 10:21 PM Analysis Method : TPHHCID2.MT  
 Last Recalib on : 20 MAY 97 07:42 AM Sample Amount : 0  
 Multiplier : 1 ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\17080601\022F1001.D

| Ret Time | Area   | Type | Width | Ref# | ug/ml  | Name               |
|----------|--------|------|-------|------|--------|--------------------|
| 7.210    | 163101 | PV   | 0.056 | 1    | 92.445 | Bromochlorobenzene |
| 19.020   | 92091  | VV   | 0.025 | 1    | 21.480 | Pentacosane        |

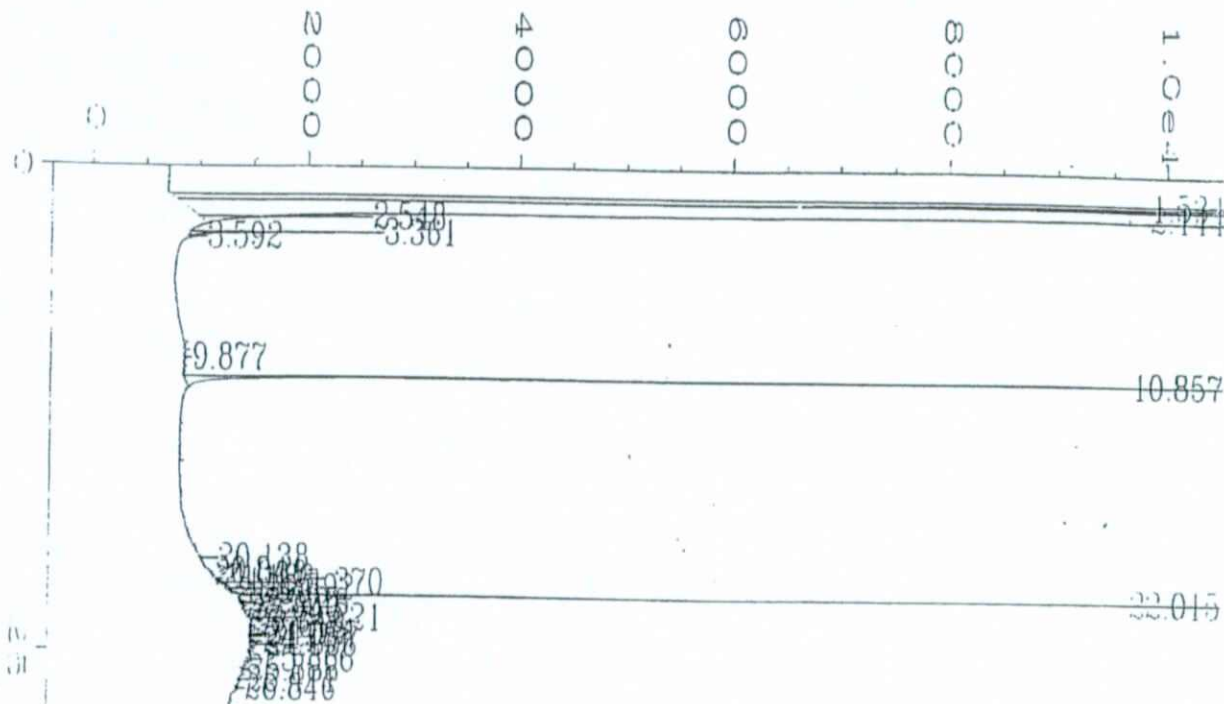
11.159  
120-107%

REVIEWED BY 8851701  
 & DATE

MO - > 100 mg/kg

AMR 8797





# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17080501\008F0301.D  
 Operator : AMR  
 Instrument : GC SYS 1  
 Sample Name : 708003-3  
 Run Time Bar Code :  
 Acquired on : 05 Aug 97 01:51 PM  
 Report Created on: 05 Aug 97 02:32 PM  
 Last Recalib on : 20 MAY 97 07:39 AM  
 Multiplier : 1

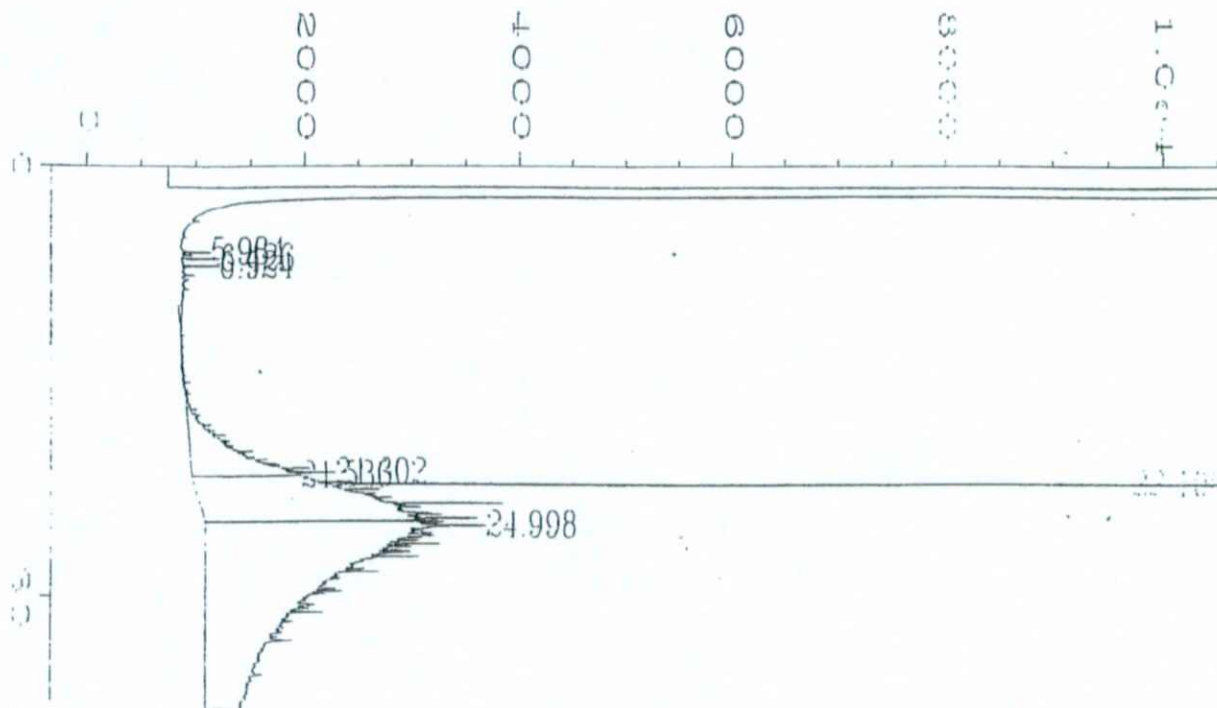
Page Number : 1  
 Vial Number : 8  
 Injection Number : 1  
 Sequence Line : 3  
 Instrument Method: TPHHCID.MTH  
 Analysis Method : TPHHCID.MTH  
 Sample Amount : 0  
 ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\17080501\008F0301.D

| Ret Time | Area  | Type | Width | Ref# | ug/ml  | Name               |
|----------|-------|------|-------|------|--------|--------------------|
| 10.857   | 56020 | BB   | 0.047 | 1-R  | 31.756 | Bromochlorobenzene |
| 22.015   | 29918 | VB   | 0.024 | 1    | 7.148  | Pentacosane        |

Time Reference Peak 10.854 Expected RT Actual RT Difference  
 1 & DATE 10.854 10.857 0.003

gas = NDL 20 mg/kg  
 Duol = NDL 80 mg/kg AMR 8797



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17081101\020F1301.D  
 Operator : amr Page Number : 1  
 Instrument : GC SYS 1 Vial Number : 20  
 Sample Name : 708003-3 Injection Number : 1  
 Run Time Bar Code: Sequence Line : 13  
 Acquired on : 11 Aug 97 10:45 PM Instrument Method: TDM00120.MT  
 Report Created on: 12 Aug 97 07:37 AM Analysis Method : TDM00120.MT  
 Last Recalib on : 13 MAY 97 08:20 AM Sample Amount : 0  
 Multiplier : 1 ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\17081101\020F1301.D

| Ret Time | Area   | Type | Width | Ref# | ug/ml   | Name             |
|----------|--------|------|-------|------|---------|------------------|
| 21.302   | 116713 | MM   | 1.441 | 1    | 43.697  | TPH-Dsl envelope |
| 21.536   | 312138 | MM R | 0.189 | 1    | 403.680 | MOTOR OIL        |
| 22.106   | 45500  | MM T | 0.029 | 1-R  | 12.146  | nC-25 surrogate  |
| 24.998   | 753187 | MM   | 4.812 | 1    | 342.018 | MOTOR OIL (2)    |

$\bar{x} = 372$

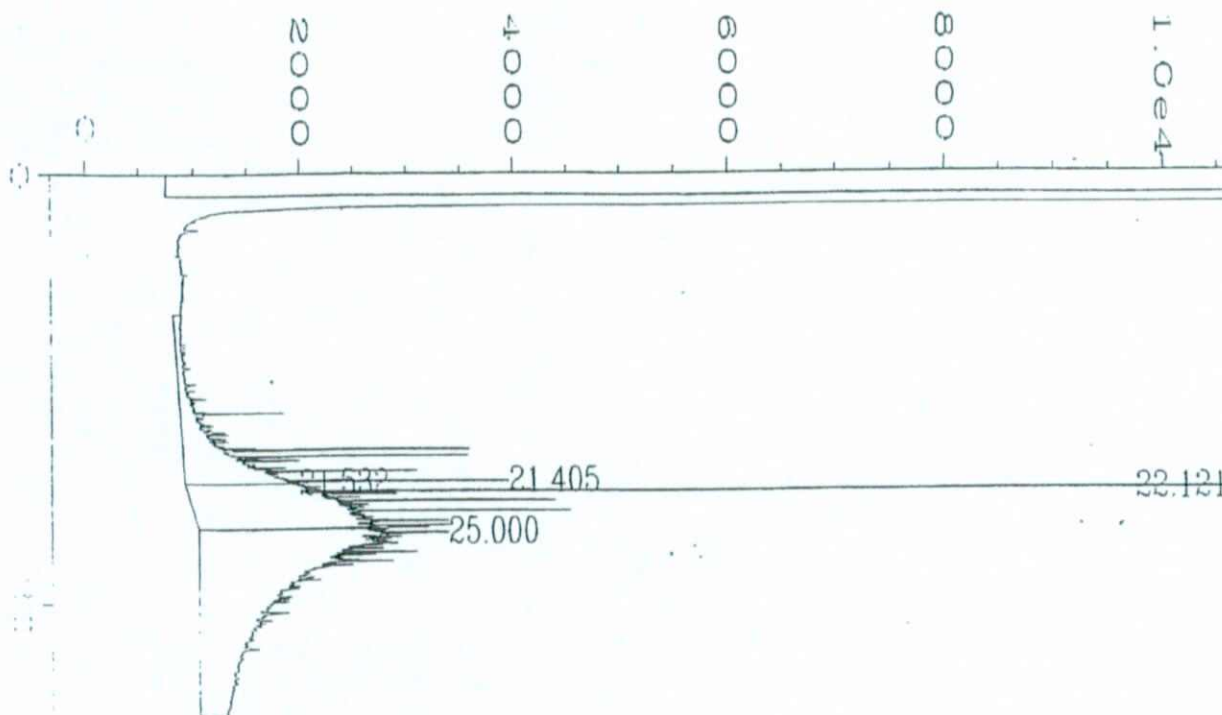
REVIEWED BY  
 DATE 8/14/97

| Time Reference Peak | Expected RT | Actual RT | Difference |
|---------------------|-------------|-----------|------------|
| 3                   | 22.110      | 22.106    | -0.004     |

User Modified

$D_{\text{diesel}} = 10 \times 25 \text{ mg/Kg}$   
 $ME = 372 \text{ ug} / 25.53 \text{ g} = 150 \text{ mg/Kg}$

AMR-12-97



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17081101\019F1301.D  
 Operator : amr Page Number : 1  
 Instrument : GC SYS 1 Vial Number : 19  
 Sample Name : 708003-1 Injection Number : 1  
 Run Time Bar Code: Sequence Line : 13  
 Acquired on : 11 Aug 97 10:01 PM Instrument Method: TDM00120.MTF  
 Report Created on: 12 Aug 97 07:34 AM Analysis Method : TDM00120.MTF  
 Last Recalib on : 13 MAY 97 08:20 AM Sample Amount : 0  
 Multiplier : 1

REVIEWED BY  
 & DATE 6/11/97

Sig. 1 in D:\HPCHEM\1\DATA\17081101\019F1301.D

| Ret Time | Area   | Type | Width | Ref# | ug/ml   | Name                      |
|----------|--------|------|-------|------|---------|---------------------------|
| 21.405   | 191606 | MM   | 1.028 | 1    | 70.334  | TPH-Dsl envelope          |
| 21.532   | 288715 | MM R | 0.182 | 1    | 375.290 | MOTOR OIL                 |
| 22.121   | 43736  | MM T | 0.029 | 1-R  | 11.659  | nC-25 surrogate/10 = 117% |
| 25.000   | 582338 | MM   | 4.120 | 1    | 251.959 | MOTOR OIL {2}             |

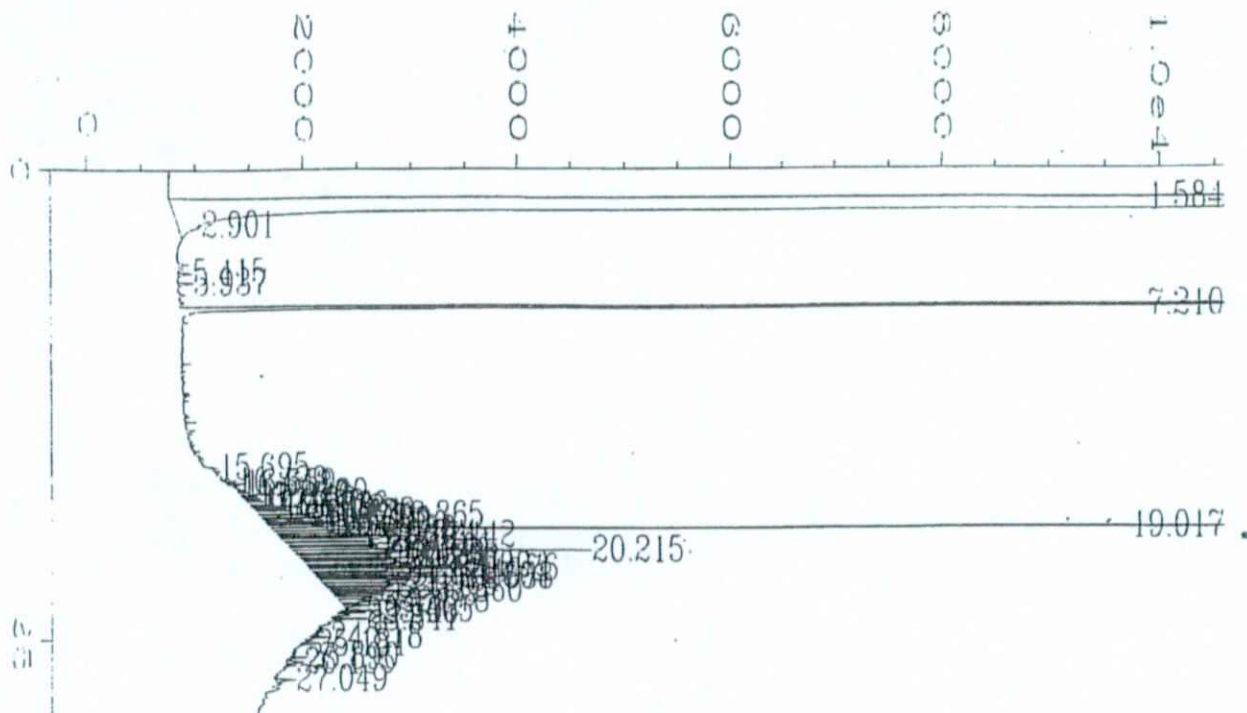
$\bar{x} = 313$

| Time | Reference Peak | Expected RT | Actual RT | Difference |
|------|----------------|-------------|-----------|------------|
| 3    |                | 22.110      | 22.121    | 0.011      |

User Modified  $D_{\text{diesel}} = 70 \frac{\mu\text{g}}{\text{mL}} \times \frac{10 \text{ mL}}{26.45 \text{ g}} = 26 \text{ mg/kg}$  due to MO

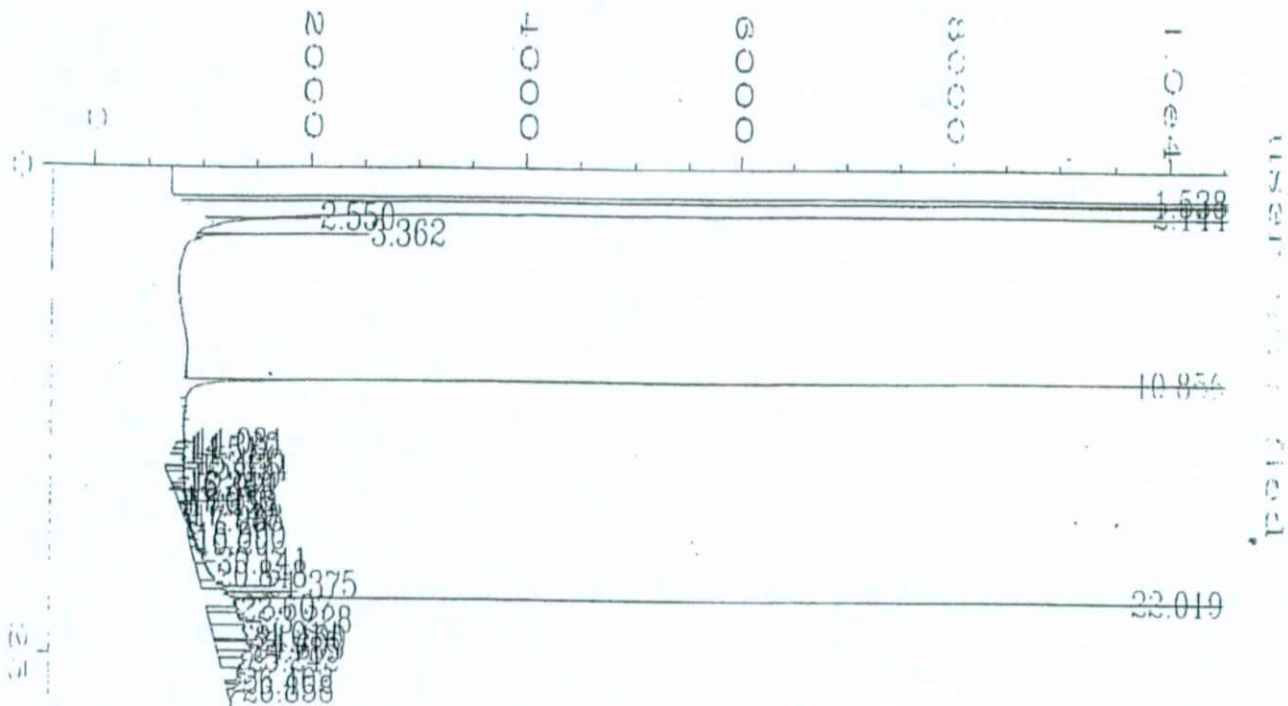
$MO = 313 \frac{\mu\text{g}}{\text{mL}} \times \frac{10 \text{ mL}}{26.45 \text{ g}} = 118 \text{ mg/kg}$   
 11-12-97





|                    |                                        |                                |
|--------------------|----------------------------------------|--------------------------------|
| Data File Name     | : D:\HPCHEM\1\DATA\17080601\023F1001.D |                                |
| Operator           | : AMR                                  | Page Number : 1                |
| Instrument         | : GC SYS 1                             | Vial Number : 23               |
| Sample Name        | : 708003-3 x4                          | Injection Number : 1           |
| Run Time Bar Code: |                                        | Sequence Line : 10             |
| Acquired on        | : 06 Aug 97 10:21 PM                   | Instrument Method: TPHHCID2.MT |
| Report Created on: | 06 Aug 97 10:54 PM                     | Analysis Method : TPHHCID2.MT  |
| Last Recalib on    | : 20 MAY 97 07:42 AM                   | Sample Amount : 0              |
| Multiplier         | : 1                                    | ISTD Amount :                  |

REVIEWED BY 866-9761  
DATE 1/10/77 7:10 PM



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17080501\009F0301.D  
 Operator : AMR  
 Instrument : GC SYS 1  
 Sample Name : 708003-4  
 Run Time Bar Code:  
 Acquired on : 05 Aug 97 02:32 PM  
 Report Created on: 07 Aug 97 08:06 AM  
 Last Recalib on : 20 MAY 97 07:39 AM  
 Multiplier : 1

Page Number : 1  
 Vial Number : 9  
 Injection Number : 1  
 Sequence Line : 3  
 Instrument Method: TPHHCID.MTH  
 Analysis Method : TPHHCID.MTH  
 Sample Amount : 0  
 ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\17080501\009F0301.D

| Ret Time | Area  | Type | Width | Ref# | ug/ml  | Name               |
|----------|-------|------|-------|------|--------|--------------------|
| 10.856   | 54437 | PB   | 0.026 | 1-R  | 30.858 | Bromochlorobenzene |
| 22.019   | 29132 | MM   | 0.025 | 1    | 6.961  | Pentacosane        |

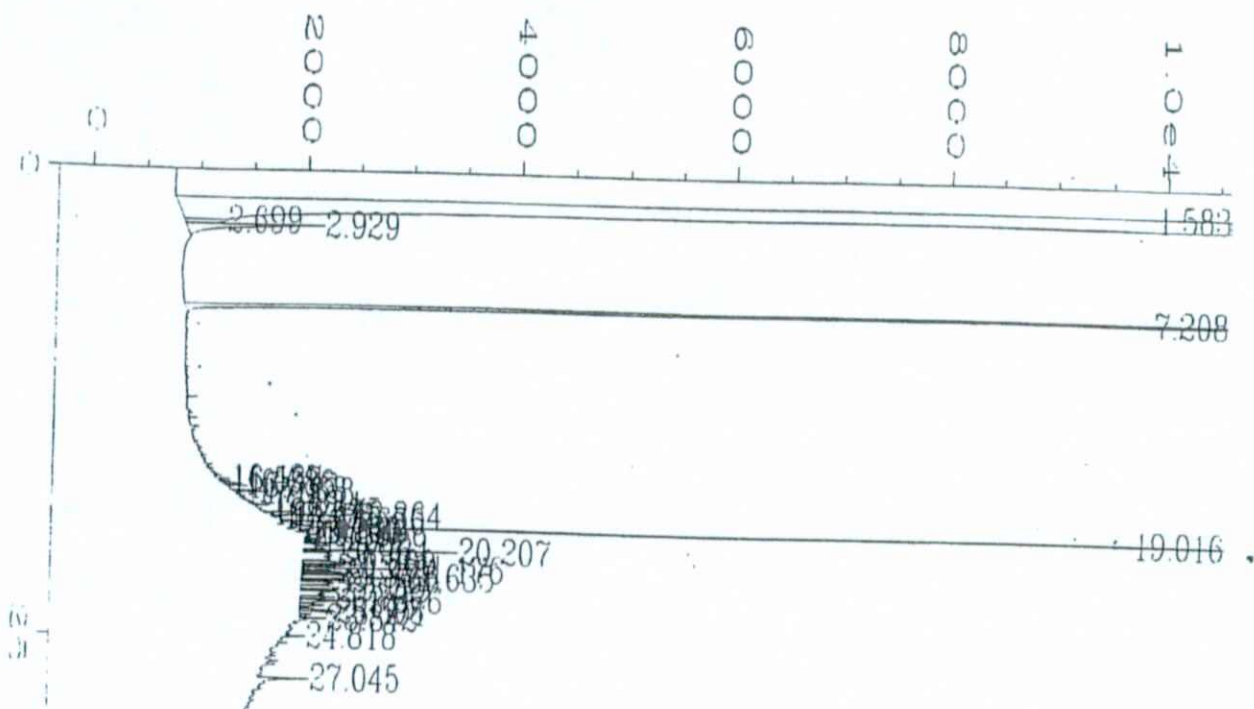
*Handwritten notes:* 125 = 1230%, 15 = 1380%

| Time Reference Peak | Expected RT | Actual RT | Difference |
|---------------------|-------------|-----------|------------|
| 1                   | 10.854      | 10.856    | 0.002      |

User Modified

REVIEWED BY *6-6-97*  
 & DATE

*Handwritten notes:*  
 gas = NDA 20 mg/kg  
 Diesel = NDA 50 mg/kg  
 gma 8797



# External Standard Report

Data File Name : D:\HPCHEM\1\DATA\17080601\024F1001.D  
 Operator : AMR  
 Instrument : GC SYS 1  
 Sample Name : 708003-4 x4  
 Run Time Bar Code:  
 Acquired on : 06 Aug 97 10:54 PM  
 Report Created on: 06 Aug 97 11:28 PM  
 Last Recalib on : 20 MAY 97 07:42 AM  
 Multiplier : 1

Page Number : 1  
 Vial Number : 24  
 Injection Number : 1  
 Sequence Line : 10  
 Instrument Method: TPHHCID2.MTH  
 Analysis Method : TPHHCID2.MTH  
 Sample Amount : 0  
 ISTD Amount :

Sig. 1 in D:\HPCHEM\1\DATA\17080601\024F1001.D

| Ret Time | Area   | Type | Width | Ref# | ug/ml  | Name               |
|----------|--------|------|-------|------|--------|--------------------|
| 7.208    | 176084 | BB   | 0.057 | 1    | 99.805 | Bromochlorobenzene |
| 19.016   | 98763  | VV   | 0.025 | 1    | 23.036 | Pentacosane        |

REVIEWED  
 & DATE

MD = NDK 100 mg/kg

AMP 8797





CCI  
ANALYTICAL  
LABORATORIES, INC.

### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003

CLIENT CONTACT: JOE NESSEL

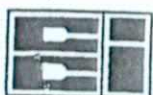
DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT PROJECT ID: E-7816-1

### AMENDED REPORT

### QUALITY CONTROL RESULTS

|                   |            |                      |     |
|-------------------|------------|----------------------|-----|
| 708003-03         | WTPH-HCID  | BCB                  | 127 |
| 708003-03         | WTPH-HCID  | C25                  | 143 |
| 708003-03(4 TO 1) | WTPH-HCID  | C25                  | 135 |
| 708003-03         | WTPH-D EXT | C25                  | 121 |
| 708003-03         | EPA-8260A  | 1,2-DCE-d4           | 84  |
| 708003-03         | EPA-8260A  | 4-BFB                | 93  |
| 708003-03         | EPA-8270   | 2-FLUOROPHENOL       | 83  |
| 708003-03         | EPA-8270   | PHENOL-d5            | 79  |
| 708003-03         | EPA-8270   | NITROBENZENE-d5      | 90  |
| 708003-03         | EPA-8270   | 2-FLUOROBIPHENYL     | 92  |
| 708003-03         | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 88  |
| 708003-03         | EPA-8270   | TERPHENYL-d14        | 100 |
| 708003-03         | EPA-8080   | TCMX                 | 73  |
| 708003-03         | EPA-8080   | DBC                  | 67  |
| 708003-03         | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 75  |
| 708003-04         | WTPH-HCID  | BCB                  | 123 |
| 708003-04         | WTPH-HCID  | C25                  | 138 |
| 708003-04(4 TO 1) | WTPH-HCID  | C25                  | 115 |
| 708003-04         | EPA-8260A  | 1,2-DCE-d4           | 86  |
| 708003-04         | EPA-8260A  | 4-BFB                | 88  |
| 708003-04         | EPA-8270   | 2-FLUOROPHENOL       | 83  |
| 708003-04         | EPA-8270   | PHENOL-d5            | 91  |
| 708003-04         | EPA-8270   | NITROBENZENE-d5      | 90  |
| 708003-04         | EPA-8270   | 2-FLUOROBIPHENYL     | 89  |
| 708003-04         | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 89  |
| 708003-04         | EPA-8270   | TERPHENYL-d14        | 95  |
| 708003-04         | EPA-8080   | TCMX                 | 62  |
| 708003-04         | EPA-8080   | DBC                  | 63  |
| 708003-04         | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 79  |



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1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

### AMENDED REPORT

### QUALITY CONTROL RESULTS

|               |                            |                   |     |     |     |
|---------------|----------------------------|-------------------|-----|-----|-----|
| EPA-8270      | PHENOL                     | 708003-01 TO 04   | 88  | 89  | 1   |
| EPA-8270      | 2-CHLOROPHENOL             | 708003-01 TO 04   | 88  | 88  | 0   |
| EPA-8270      | 1,4-DICHLOROBENZENE        | 708003-01 TO 04   | 85  | 83  | 2   |
| EPA-8270      | N-NITROSO-DI-N-PROPYLAMINE | 708003-01 TO 04   | 101 | 97  | 4   |
| EPA-8270      | 1,2,4-TRICHLOROBENZENE     | 708003-01 TO 04   | 84  | 84  | 0   |
| EPA-8270      | 4-CHLORO-3-METHYLPHENOL    | 708003-01 TO 04   | 88  | 87  | 1   |
| EPA-8270      | ACENAPHTHENE               | 708003-01 TO 04   | 89  | 87  | 2   |
| EPA-8270      | 2,4-DINITROTOLUENE         | 708003-01 TO 04   | 82  | 76  | 7   |
| EPA-8270      | 4-NITROPHENOL              | 708003-01 TO 04   | 76  | 65  | 16  |
| EPA-8270      | PENTACHLOROPHENOL          | 708003-01 TO 04   | 74  | 71  | 3   |
| EPA-8270      | PYRENE                     | 708003-01 TO 04   | 119 | 123 | 3   |
| EPA-8080      | GAMMA-BHC                  | 708003-01 TO 04   | 87  | 84  | 4   |
| EPA-8080      | HEPTACHLOR                 | 708003-01 TO 04   | 88  | 100 | 12  |
| EPA-8080      | ALDRIN                     | 708003-01 TO 04   | 85  | 84  | 1   |
| EPA-8080      | DIELDRIN                   | 708003-01 TO 04   | 79  | 79  | 0   |
| EPA-8080      | ENDRIN                     | 708003-01 TO 04   | 96  | 91  | 5   |
| EPA-8080      | 4,4-DDT                    | 708003-01 TO 04   | 90  | 85  | 5   |
| EPA-8150      | DALAPON                    | 708003-01 TO 04   | 48  | 61  | 24  |
| EPA-8150      | DICAMBA                    | 708003-01 TO 04   | 70  | 84  | 18  |
| EPA-8150      | 2,4-D                      | 708003-01 TO 04   | 73  | 85  | 15  |
| EPA-8150      | SILVEX(2,4,5-TP)           | 708003-01 TO 04   | 77  | 94  | 20  |
| EPA-8150      | MCPA                       | 708003-01 TO 04   | 72  | 87  | 19  |
| EPA-7060 (AS) | ARSENIC                    | 708003-01 TO 04   | 102 | N/A | N/A |
| EPA-7081 (BA) | BARIUM                     | 708003-01 TO 04   | 94  | N/A | N/A |
| EPA-7130 (CD) | CADMIUM                    | 708003-01 TO 04   | 113 | N/A | N/A |
| EPA-7190 (CR) | CHROME                     | 708003-01 TO 04   | 98  | N/A | N/A |
| EPA-7420 (PB) | LEAD                       | 708003-01, 02, 03 | 99  | N/A | N/A |
| EPA-7420 (PB) | LEAD                       | 708003-03         | 103 | N/A | N/A |
| EPA-7470 (HG) | MERCURY                    | 708003-01 TO 04   | 110 | N/A | N/A |
| EPA-7740 (SE) | SELENIUM                   | 708003-01 TO 04   | 100 | N/A | N/A |
| EPA-7760 (AG) | SILVER                     | 708003-01 TO 04   | 111 | N/A | N/A |



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### CERTIFICATE OF ANALYSIS

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
CCIL JOB #: 708003

DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

### AMENDED REPORT

### QUALITY CONTROL RESULTS

| SURROGATE RECOVERY |            |                      |        |
|--------------------|------------|----------------------|--------|
| CCIL SAMPLE ID     | ANALYTE    | SUR ID               | % RECV |
| 708003-01          | WTPH-HCID  | BCB                  | 112    |
| 708003-01          | WTPH-HCID  | C25                  | 120    |
| 708003-01(4 TO 1)  | WTPH-HCID  | C25                  | 107    |
| 708003-01          | WTPH-D EXT | C25                  | 117    |
| 708003-01          | EPA-8260A  | 1,2-DCE-d4           | 95     |
| 708003-01          | EPA-8260A  | 4-BFB                | 83     |
| 708003-01          | EPA-8270   | 2-FLUOROPHENOL       | 75     |
| 708003-01          | EPA-8270   | PHENOL-d5            | 82     |
| 708003-01          | EPA-8270   | NITROBENZENE-d5      | 85     |
| 708003-01          | EPA-8270   | 2-FLUOROBIPHENYL     | 88     |
| 708003-01          | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 90     |
| 708003-01          | EPA-8270   | TERPHENYL-d14        | 77     |
| 708003-01          | EPA-8080   | TCMX                 | 60     |
| 708003-01          | EPA-8080   | DBC                  | 73     |
| 708003-01          | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 77     |
| 708003-02          | EPA-8260A  | 1,2-DCE-d4           | 114    |
| 708003-02          | EPA-8260A  | 4-BFB                | 77     |
| 708003-02          | EPA-8270   | 2-FLUOROPHENOL       | 88     |
| 708003-02          | EPA-8270   | PHENOL-d5            | 92     |
| 708003-02          | EPA-8270   | NITROBENZENE-d5      | 93     |
| 708003-02          | EPA-8270   | 2-FLUOROBIPHENYL     | 96     |
| 708003-02          | EPA-8270   | 2,4,6-TRIBROMOPHENOL | 91     |
| 708003-02          | EPA-8270   | TERPHENYL-d14        | 79     |
| 708003-02          | EPA-8080   | TCMX                 | 67     |
| 708003-02          | EPA-8080   | DBC                  | 76     |
| 708003-02          | EPA-8150   | 2,4,6-TRIBROMOPHENOL | 79     |





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WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

### AMENDED REPORT

### QUALITY CONTROL RESULTS

#### BLANK AND DUPLICATE RESULTS

| METHOD           | BLK RESULT       | ASSOC SMPLS       | DUP RESULT | ORIG RESULT | %RDP | ASSOC SMPLS |
|------------------|------------------|-------------------|------------|-------------|------|-------------|
| WTPH-HCID(GAS )  | ND(<20)          | 708003-01 TO 04   | ND(<20)    | ND(<20)     | **** | SAME        |
| WTPH-HCID(DSL)   | ND(<50)          | 708003-01 TO 04   | ND(<50)    | ND(<50)     | **** | SAME        |
| WTPH-HCID(OIL)   | ND(<100)         | 708003-01 TO 04   | >100       | ND(<100)    | **** | SAME        |
| WTPH-D EXT (DSL) | ND(<25)          | 708003-01 TO 04   | 20000      | 18000       | 11   | SAME        |
| WTPH-D EXT (OIL) | ND(<50)          | 708003-01 TO 04   | ND(<5000)  | ND(<5000)   | **** | SAME        |
| EPA-7060 (AS)    | ND(<0.3)         | 708003-01 TO 04   | 2.3        | 2.1         | 10   | SAME        |
| EPA-7081 (BA)    | ND(<0.4)         | 708003-01 TO 04   | 71         | 63          | 12   | SAME        |
| EPA-7130 (CD)    | ND(<0.2)         | 708003-01 TO 04   | 0.3        | 0.3         | **** | SAME        |
| EPA-7190 (CR)    | ND(<2)           | 708003-01 TO 04   | 17         | 17          | 0    | SAME        |
| EPA-7420 (PB)    | ND(<8)           | 708003-01, 02, 04 | 63         | 60          | 5    | SAME        |
| EPA-7420 (PB)    | ND(<8)           | 708003-03         | 20         | 30          | **** | SAME        |
| EPA-7470 (HG)    | ND(<.025)        | 708003-01 TO 04   | ND(<.025)  | ND(<.025)   | **** | SAME        |
| EPA-7740 (SE)    | ND(<1)           | 708003-01 TO 04   | ND(<1)     | ND(<1)      | **** | SAME        |
| EPA-7760 (AG)    | ND(<0.4)         | 708003-01 TO 04   | ND(<0.4)   | ND(<0.4)    | **** | SAME        |
| EPA-8260A        | SEE BLANK REPORT |                   |            |             |      |             |
| EPA-8270         | SEE BLANK REPORT |                   |            |             |      |             |
| EPA-8080         | SEE BLANK REPORT |                   |            |             |      |             |
| EPA-8150         | SEE BLANK REPORT |                   |            |             |      |             |

#### SPIKE/ SPIKE DUPLICATE RESULTS

| METHOD    | SPIKE ID           | ASSOCIATED<br>SAMPLES | % SPIKE<br>RECOVERY | % SPIKE DUP<br>RECOVERY | REL % DIFF |
|-----------|--------------------|-----------------------|---------------------|-------------------------|------------|
| EPA-8260A | 1,1-DICHLOROETHENE | 708003-01 TO 04       | 76                  | 75                      | 1          |
| EPA-8260A | TRICHLOROETHENE    | 708003-01 TO 04       | 84                  | 78                      | 7          |
| EPA-8260A | CHLOROBENZENE      | 708003-01 TO 04       | 88                  | 83                      | 7          |



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---

CERTIFICATE OF ANALYSIS

---

CLIENT: EARTH CONSULTANTS INC.  
1805 136TH PLACE NE  
BELLEVUE, WA 98005

DATE: 8/21/97  
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DATE RECEIVED: 8/1/97  
WDOE ACCREDITATION #: C142

CLIENT CONTACT: JOE NESSEL

CLIENT PROJECT ID: E-7816-1

AMENDED REPORT

---

QUALITY CONTROL RESULTS

---

\* RESULT OUTSIDE OF CONTROL LIMITS DUE TO HIGH LEVEL OF ANALYTE IN SAMPLE  
\*\*\*\* %RPD NOT REPORTED FOR VALUES <X5 THE REPORTING LIMIT

APPROVED BY: CPH

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Granville Southern Corporation  
8760 122nd Avenue Northeast  
Kirkland, Washington 98083-2878

Attention: Mr. Michael Reid  
President



## MEMORANDUM

**To:** Dan Brewer, PE, Asst. Public Works Director  
**From:** Katherine Casseday PE, PTOE, Mirai Transportation Planning and Engineering  
**Subject:** Traffic Impacts Review for Pacific Heights Development  
**Date:** November 21, 2007

Mirai Associates provided technical assistance for the review of a renewed development proposal called Pacific Heights. Pacific Heights is a proposed 77-unit development of zero-lot-line single family houses located within both Des Moines and Federal Way with access to S 279th Street and to S 284th Street. The original development proposal, 100 multi-family condominium housing units called Pacific Place, was filed with King County since the area was unincorporated. When the area was annexed into Des Moines and Federal Way in the late 1990s, a 3-party agreement between the cities of Des Moines and Federal Way and the developer was established to preserve the work completed towards approval for the original development. The original development did not go through a development hearing process in either City.

This memorandum documents the traffic differences between the original proposal for Pacific Place and the current project known as Pacific Heights. This memorandum also identifies changes in traffic impacts that can be expected with the current proposal.

### Comparison of Pacific Heights with Original Pacific Place

There are four areas where changes have been identified between the Pacific Place and Pacific Heights proposed developments:

1. The total daily traffic generated by the development
2. Changes to the street network planned to support the development
3. Project traffic assignment to the street network
4. The magnitude of the traffic impacts on neighboring communities

When these four areas of differences and disparity are combined the resulting traffic impacts would justify the need for additional mitigating measures. **Table 1** shows the comparison between the two development proposals.

We observed the following differences between these two development proposals:

- While the original Pacific Place consisted of more housing units, the current proposal, Pacific Heights would generate more trips than the original proposal: 151 trips more daily traffic and 23 trips more PM peak hour traffic.
- Two points of access are proposed for each project, however the street network has changed to the north. Originally the north connection was to S 279th Street, a dead-end roadway with full access to 16th Avenue S. **Figure 1** shows the map from 1999 with the street network as it was for the original proposal. **Figure 2** shows the site access for Pacific Heights. Note that under the original development proposal, no project traffic would flow through the Redondo Riviera neighborhood; a single family neighborhood of approximately 170 homes. Recently, the access to 16th Avenue S has been reconfigured to limit traffic on S 279th Street to a right-turn movement into or from Pacific Highway South (PHS). There is now a single full access point into the Redondo Riviera neighborhood at S 276th Street and 16th Avenue S (S 279th Street and 13th Avenue S have been connected).
- The original distribution of site traffic was estimated as 75 percent to and from the north and 25 percent to and from the south. The traffic analysis for Pacific Place was conducted by Hamlin & Associates and is attached for reference. The trip distribution is expected to remain similar for Pacific Heights, although access to the arterial network has changed.
- Traffic assignment to the street network for the original development proposal was expected to be strongly oriented to the north access point, S 279th Street and 16th Avenue S for Pacific Place. With the changed street network and limited connections to both Pacific Highway S and to 16th Avenue S, the Pacific Heights project trip assignment is more likely to be roughly even between the two access points for the development. See **Figure 3** for the expected trip assignment for Pacific Heights.
- Site traffic would flow through the Redondo Riviera neighborhood to access 16th Avenue S at S 276th Street. Previously, site traffic and impacts had not been identified for the Redondo Riviera neighborhood because at that time there was no connection to S 276th Street. The Pacific Heights project could send 40 to 60 percent of the site traffic through the Redondo Riviera neighborhood. The local streets within the neighborhood carry from 270 to 1620 daily trips. The addition of half of the Pacific Heights site traffic to Redondo Riviera neighborhood streets could more than double the traffic on some street segments. At 276th Street just west of 16th Avenue S the daily traffic could increase by about 25 percent due to the Pacific Heights project. Based on recent counts along 16th Avenue S and the intersection at S 276th Street and 16th Avenue S, additional morning and evening peak hour traffic is expected to operate at LOS D or better under the current proposal. The added traffic from Pacific Heights is not likely to cause breakdown at S 276th Street and 16th Avenue S intersection, however, there would be some added delays for exiting traffic from Redondo Riviera.



- Another development under review by City of Des Moines is Crestwood Park which would provide another connection into the Redondo Riviera neighborhood at the north end of 12th Place S. This new connection to 16th Avenue S would provide alternate access options for some residents of Redondo Riviera.
- More traffic would flow through the Applewood neighborhood (in Federal Way) than originally expected (originally 25 percent of 586 daily trips, or approximately 145 daily trips – up to possibly 50 percent of 737 daily trips, or 368 daily trips). This could be more than double the originally expected site traffic through Applewood.

## Findings and Recommendations

- Pacific Heights proposes 23 fewer housing units but generates a greater number of daily traffic trips from the project, 151 more daily trips.
- The two access points are the same for the two developments, however, due to neighborhood street network changes between 1998 and 2007, the site traffic from Pacific Heights would result in traffic impacts to both the Redondo Riviera and Applewood neighborhoods, even with a roughly balanced flow of site traffic north and south.
- There could be between 220 and 440 daily trips (40 to 60%) added to the street system in Redondo Riviera which was developed incrementally and was likely intended to provide for local access. This additional traffic would shift the function of S 276th Street from a local access street to a neighborhood collector street, with well over 1,000 vehicles per day.

The differences identified between the original proposal Pacific Place and the current proposal Pacific Heights are enough to justify off-site mitigation for the Redondo Riviera neighborhood. I recommend that the SEPA conditions for the new development include traffic calming treatments along S 279th Street east of 13th Avenue S, along 13th Avenue S between S 279th Street and S 276th Street, and along S 276th Street from 13th Avenue S to 16th Avenue S. The Redondo Riviera neighborhood should be involved in the process to select and locate the traffic calming devices for the community.

The limitations in access to 16<sup>th</sup> Avenue S from these neighborhoods will continue to be a challenge for circulation. While not directly a mitigating measure, I suggest that the City explore other options to manage circulation and to expand access for the Redondo Riviera community west of Pacific Highway South.



**Attachments:**

**Table 1.** Pacific Heights Traffic Comparison

**Figure 1.** 1999 Street Network

**Figure 2.** Pacific Heights Access Points

**Figure 3.** Pacific Heights Project Traffic Assignment

*Revised Traffic Impact Analysis for Pacific Place with New Access Through Choi Parcel, David  
I. Hamlin & Associates, May 12, 1998*

Table 1. Pacific Heights Traffic Comparison

|                                     | 1998 Proposal and Study                                                                                                          |               |                | 2007 Proposal                                                                                                                                                                                                                       |               |                | Changes from Original Proposal                                                                                       |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|----------------------------------------------------------------------------------------------------------------------|
|                                     | Total Trips                                                                                                                      | Inbound Trips | Outbound Trips | Total Trips                                                                                                                                                                                                                         | Inbound Trips | Outbound Trips |                                                                                                                      |
| Project Size, Number of Units       | 100 units                                                                                                                        |               |                | 77 units                                                                                                                                                                                                                            |               |                | 23 fewer units                                                                                                       |
| Land Use                            | Owner-occupied condominiums                                                                                                      |               |                | Zero lot-line single family homes                                                                                                                                                                                                   |               |                | Multi-family to Single family housing                                                                                |
| ITE Land Use Code                   | 230                                                                                                                              |               |                | 210                                                                                                                                                                                                                                 |               |                |                                                                                                                      |
| Daily Trips                         | 586                                                                                                                              |               |                | 737                                                                                                                                                                                                                                 |               |                | 151 additional daily trips                                                                                           |
| AM Peak hour trips (Total, In, Out) | 44                                                                                                                               | 7             | 37             | 58                                                                                                                                                                                                                                  | 14            | 44             | 7 more trips in and out from development in the morning peak                                                         |
| PM Peak hour trips (Total, In, Out) | 55                                                                                                                               | 37            | 18             | 78                                                                                                                                                                                                                                  | 49            | 29             | 12 and 11 more trips in and out (respectively) from the development in the evening peak                              |
| Roadway Access                      | Two points of access, to the north and to the south                                                                              |               |                | Two points of access, to the north and to the south                                                                                                                                                                                 |               |                |                                                                                                                      |
| Trip Distribution                   | Northern link had full access to both 16th Avenue S and SR 99 Pacific Highway S                                                  |               |                | Northern link to 16th Avenue S and S 279th Street is now constrained to right in and right out.                                                                                                                                     |               |                |                                                                                                                      |
|                                     | Northern link connected to cul-de-sac, S 279th Street.                                                                           |               |                | Northern link now connected to extended neighborhood, with outlet to S 276th Street and 16th Avenue S                                                                                                                               |               |                | Project traffic would flow through Redondo Rivera and Applewood neighborhoods for full access to and from the north. |
|                                     | 75 percent oriented to the north via SR 99/Pacific Highway South and S 272nd Street (access to I-5)                              |               |                | Same trip distribution                                                                                                                                                                                                              |               |                |                                                                                                                      |
| Trip Assignment                     | 25 percent oriented to the south via S 288th Street intersection with Pacific Highway South                                      |               |                |                                                                                                                                                                                                                                     |               |                |                                                                                                                      |
|                                     | Trip assignment similar to trip distribution, with 76 percent assigned to S 279th Street and 16th Avenue S and Pacific Highway S |               |                | Trip assignment is more likely to be evenly split between north and south access points, since both would now require travel through developed neighborhoods, low speed on local streets, to reach full access to Pacific Highway S |               |                |                                                                                                                      |





## City of Des Moines

1999 Aerial Photo

### Des Moines City Limits

### Crestwood Park PUD

Proposed Lot Lines  
PUD Boundaries

### Pacific Heights PUD

Proposed Lot Lines  
PUD Boundaries



**Figure 1**  
**1999 Street Network**

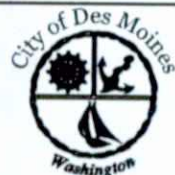
Scale in Feet  
100 50 0 100 200 300



21630 11th Ave S  
Des Moines, WA 98198-6398  
PHONE: (206) 878-6595 | FAX: (206) 870-7626  
WEB: <http://www.desmoineswa.gov>

Fig. 100: Pacific Heights  
Map Generated Nov 11, 2007  
Product of City of Des Moines GIS





# **City of Des Moines** Redondo Riveria & Proposed PUDs

## **Des Moines City Limits**

## **Crestwood Park PUD**

- Proposed Lot Lines
- PUD Boundaries
- Wetland

## **Pacific Heights PUD**

- Proposed Lot Lines
- PUD Boundaries
- Wetland

Access for Pacific Heights



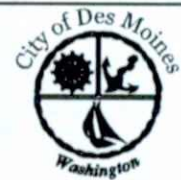
**Figure 2 Access for Pacific Heights**



21630 11th Ave S  
Des Moines, WA 98198-6398  
PHONE: (206) 526-4595 / FAX: (206) 526-7625  
WEB: <http://www.desmoineswa.gov>

For Redondo Riveria and  
Map Generated: Mar 1, 2007  
Product of City of Des Moines GIS





## City of Des Moines

Redondo Rivera &  
Proposed PUDs

### Des Moines City Limits

### Crestwood Park PUD

- Proposed Lot Lines
- PUD Boundaries
- Wetland

### Pacific Heights PUD

- Proposed Lot Lines
- PUD Boundaries
- Wetland



**Figure 3 Pacific Heights Project Traffic Assignment**



21630 11th Ave S  
Des Moines, WA 98198-6398  
PHONE: (206) 678-4595 | FAX: (206) 678-7626  
WEB: <http://www.desmoineswa.gov>

File: Redondo Rivera.mxd  
Map Generated: Mar 1, 2017  
Product of City of Des Moines GIS



---

# **Pacific Heights**

fka: Pacific Place

## **Preliminary Technical Information Report**

**Des Moines, Washington  
November 1, 2006**

Revised March 5, 2007  
Revised June 29, 2007

**Prepared for:  
Pacific West Development, LLC  
2201 Lind Ave. SW, St. 150  
Renton, WA 98055  
Attn: Cory Martin**

Prepared By:  
Peter Cunningham, E.I.T.  
Reviewed By:  
Harold Peterson, P.E.



EXPIRES 06/07/08

---

**PCE Job No. PACW-0001**



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## **APPENDIX A**

KCRTS Calculations  
Offsite drainage plans  
KCRTS Calculations for offsite detention systems  
Dispersion Trench Details

## **APPENDIX B**

Downstream Analysis by Eastside Consultants, Inc., August 25, 1997

## **APPENDIX C**

Rainfall Regions and Regional Scale Factor  
Table 3.2.2.B – SCS Soil Equivalence  
Wetlands Map  
Streams and Floodplains Map  
Erosion Hazard Areas Map  
Landslide Hazard Areas Map  
Seismic Hazard Areas Map

## **APPENDIX D**

WSDOT SR99 STORMWATER REPORT Pg's 10-14  
WSDOT Highway Runoff Manual, Table 2-1  
WSDOT SR99 STORMWATER REPORT Pg 24  
WSDOT Special Provisions for the Media Filter System (FMS), 2 pages  
WSDOT Construction Specifications for the Stormfilter, 2 pages  
WSDOT SR99 STORMWATER REPORT Pervious/Impervious Areas in Basin A Table  
MGS FLOOD PROJECT REPORT for Basin A, 5 pages  
Flow Duration Plot for Basin A  
Storm Sewer Design, 2 pages  
WSDOT Basin and TDA Map "**FIGURE 2**"  
WSDOT Drainage Plan "**DI**" – SR99, S 284<sup>TH</sup> TO S272<sup>ND</sup> ST. HOV LANES  
WSDOT Drainage Profile "**DP2**" – SR99, S 284<sup>TH</sup> TO S272<sup>ND</sup> ST. HOV LANES  
WSDOT Drainage Profile "**DP4**" – SR99, S 284<sup>TH</sup> TO S272<sup>ND</sup> ST. HOV LANES  
WSDOT Drainage Profile "**DP12**" – SR99, S 284<sup>TH</sup> TO S272<sup>ND</sup> ST. HOV LANES  
AppleWood Development Cover Sheet  
AppleWood Development Road and Storm – Plan and Profile  
AppleWood Development Road and Storm Details



## SECTION 1 PROJECT OVERVIEW

The Pacific Heights PUD project proposes to construct single-family and multifamily residences on a 12.72 acre site. The site will access from S. 279<sup>th</sup> St. and is bounded by Pacific Highway S on the east, The Plat of Applewood to the south, and single family residences to the north and east and is located within the jurisdictional boundary of Des Moines, Washington (**Figure 2: Vicinity Map**). More generally, the site is located within Sections 32 & 33, Township 22 North, and Range 4 East of the Willamette Meridian.

A review of the 1990 King County Sensitive Areas Map Folio shows a Class 2 and a Class 1(b) wetland present on the site. Other site features are a gravel access road and a small shed. The site vegetation consists of evergreen and deciduous trees, brush and pasture grasses. The existing topography slopes generally to the west with grades from 5 percent to 40 percent with the steeper grades located along the eastern property line. (**Figure 4: Existing Conditions Map**). Soils on site are classified as Alderwood gravelly sandy loam (AgB), 0 to 6 percent slopes, Alderwood gravelly sandy loam (AgC), 6 to 15 percent slopes, Norma sandy loam (No). The Alderwood soils are hydrologic class C and the Norma is class D per the SCS Soils Map (**Figure 3: SCS Soils Map**).

The site will be developed into 77 lots which consists of 14 single family sites, 30 duplex sites, 1 triplex site, and associated access roads and utilities. On-site improvements will consist of Roads, Sidewalks, and Houses and their relating features such as landscaping, patios, driveways and decks. Off-site improvements consist of the extension of the curb, gutter, and sidewalk between 15<sup>th</sup> Ave. S., S. 279<sup>th</sup> St. and along the proposed roads "A" and "B".

Proposed drainage for the site will consist of routing all non-pollution generating surfaces to the centrally located wetland. Surface runoff from streets and yard areas will be collected in an underground storm drain pipe system, and conveyed to a detention vault located in the southwest corner of the site (**Figure 5: Developed Conditions Map**). Discharge from the vault will enter a dispersion trench along the western property line within the Detention Tract.

Although the project is located within the Des Moines corporate limits, the project drainage design is required to use the 1998 King County Drainage Manual as a basis for design.



King County Department of Development and Environmental Services  
**TECHNICAL INFORMATION REPORT (TIR) WORKSHEET**

**Part 1 PROJECT OWNER AND  
PROJECT ENGINEER**

Project Owner  
Cory Martin, Pacific West Development, LLC

Address  
2201 Lind Ave. SW, Ste 150, Renton, WA  
98055

Phone  
(425) 687-7778

Project Engineer Harold F. Peterson  
Company Peterson Consulting Engineers

Address/Phone 4010 LAKE WASHINGTON  
BLVD. St 300, (425) 827-5874

**Part 2 PROJECT LOCATION AND  
DESCRIPTION**

Project Name  
**Pacific Place**

Location  
Federal Way adjacent to Pacific Hwy

Township 22N

Range 4E W.M.

.....Section 32

**Part 3 TYPE OF PERMIT  
APPLICATION**

- ☐ Subdivision  
☒ Short Subdivision  
☒ Grading  
☐ Commercial  
☒ Other Forest Practices

**Part 4 OTHER REVIEWS AND PERMITS**

- ☐ DFW HPA ☐ Shoreline Management  
☐ COE 404 ☐ Rockery  
☐ DOE Dam Safety ☒ Structural Vaults  
☐ FEMA Floodplain ☐ Other  
☒ COE Wetlands

**Part 5 SITE COMMUNITY AND DRAINAGE BASIN**

Community

Federal Way Community Planning Area

Drainage Basin

Puget Sound

**Part 6 SITE CHARACTERISTICS**

- |                                                        |                                                              |
|--------------------------------------------------------|--------------------------------------------------------------|
| <input type="checkbox"/> River _____                   | <input type="checkbox"/> Floodplain _____                    |
| <input type="checkbox"/> Stream _____                  | <input checked="" type="checkbox"/> Wetlands <u>Class II</u> |
| <input type="checkbox"/> Critical Stream Reach         | <input type="checkbox"/> Seeps/Springs                       |
| <input type="checkbox"/> Depressions/Swales            | <input type="checkbox"/> High Groundwater Table              |
| <input type="checkbox"/> Lake _____                    | <input type="checkbox"/> Groundwater Recharge                |
| <input checked="" type="checkbox"/> Steep Slopes _____ | <input type="checkbox"/> Other _____                         |

### Part 7 SOILS

| Soil Type | Slopes          | Erosion Potential | Erosive Velocities |
|-----------|-----------------|-------------------|--------------------|
| AgB       | 0 to 6 percent  | slight            |                    |
| AgC       | 6 to 15 percent | moderate          |                    |
| No        |                 | moderate          |                    |
|           |                 |                   |                    |

☐ Additional Sheets Attached

### Part 8 DEVELOPMENT LIMITATIONS

| REFERENCE                                                     | LIMITATION/SITE CONSTRAINT |
|---------------------------------------------------------------|----------------------------|
| <input type="checkbox"/> Ch. 4 – Downstream Analysis          |                            |
| <input checked="" type="checkbox"/> See Appendix B of the TIR |                            |
| <input type="checkbox"/>                                      |                            |
| <input type="checkbox"/>                                      |                            |
| <input type="checkbox"/>                                      |                            |
| <input type="checkbox"/>                                      |                            |

☐ Additional Sheets Attached

### Part 9 ESC REQUIREMENTS

| MINIMUM ESC REQUIREMENTS<br>DURING CONSTRUCTION                       | MINIMUM ESC REQUIREMENTS<br>AFTER CONSTRUCTION                                           |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Sedimentation Facilities          | <input checked="" type="checkbox"/> Stabilize Exposed Surface                            |
| <input checked="" type="checkbox"/> Stabilized Construction Entrance  | <input type="checkbox"/> Remove and Restore Temporary ESC Facilities                     |
| <input type="checkbox"/> Perimeter Runoff Control                     | <input checked="" type="checkbox"/> Clean and Remove All Silt and Debris                 |
| <input checked="" type="checkbox"/> Clearing and Grading Restrictions | <input type="checkbox"/> Ensure Operation of Permanent Facilities                        |
| <input checked="" type="checkbox"/> Cover Practices                   | <input checked="" type="checkbox"/> Flag Limits of SAO and open space preservation areas |
| <input checked="" type="checkbox"/> Construction Sequence             | <input type="checkbox"/> Other                                                           |
| <input type="checkbox"/> Other                                        |                                                                                          |

### Part 10 SURFACE WATER SYSTEM

|                                              |                                             |                                                    |                                                    |
|----------------------------------------------|---------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Grass Lined Channel | <input type="checkbox"/> Tank               | <input type="checkbox"/> Infiltration              | Method of Analysis                                 |
| <input type="checkbox"/> Pipe System         | <input type="checkbox"/> Vault              | <input type="checkbox"/> Depression                | <u>1998 KCSWDM</u>                                 |
| <input type="checkbox"/> Open Channel        | <input type="checkbox"/> Energy Dissipater  | <input checked="" type="checkbox"/> Flow Dispersal | Compensation/Mitigation of Eliminated Site Storage |
| <input type="checkbox"/> Dry Pond            | <input checked="" type="checkbox"/> Wetland | <input type="checkbox"/> Waiver                    | _____                                              |
| <input type="checkbox"/> Wet Pond            | <input type="checkbox"/> Stream             | <input type="checkbox"/> Regional Detention        |                                                    |

Brief Description of System Operation \_\_\_\_\_

#### Facility Related Site Limitations

| Reference | Facility | Limitation |
|-----------|----------|------------|
|-----------|----------|------------|

|       |       |       |
|-------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |

### Part 11 STRUCTURAL ANALYSIS

- ☒ Cast in Place Vault
- ☐ Retaining Wall
- ☐ Rockery > 4' High
- ☐ Structural on Steep Slope
- ☐ Other

### Part 12 EASEMENTS/TRACTS

- ☒ Drainage Easement
- ☐ Access Easement
- ☐ Native Growth Protection Easement
- ☒ Tract
- ☐ Other

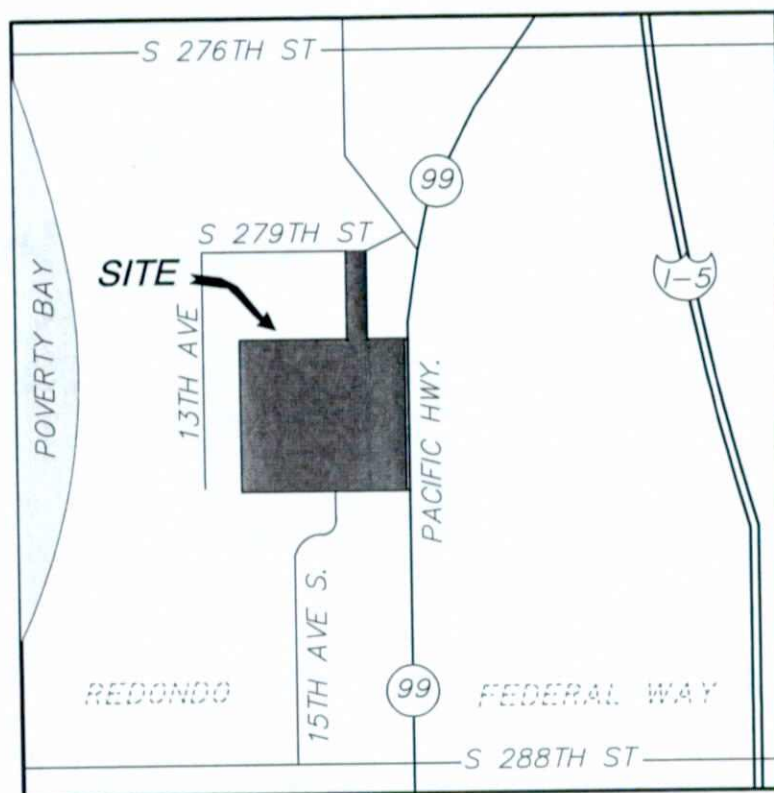
### Part 13 SIGNATURE OF PROFESSIONAL ENGINEER

I or a civil engineer under my supervision my supervision have visited the site. Actual site conditions as observed were incorporated into this worksheet and the attachments. To the best of my knowledge the information provided here is accurate.

\_\_\_\_\_  
*Signed/Date*



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## VICINITY MAP

NTS

VICINITY MAP  
PACIFIC PLACE

SEC. 32, TWP.22N., RGE. 4E., W.M.

**PETERSON**  
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4030 Lake Washington  
Blvd. N.E., Suite 200  
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Tel (425) 827-5874  
Fax (425) 822-7216

DWN. BY:

DAF

DATE:

11/2/06

JOB NO.

PACW-0001

CHKD. BY:

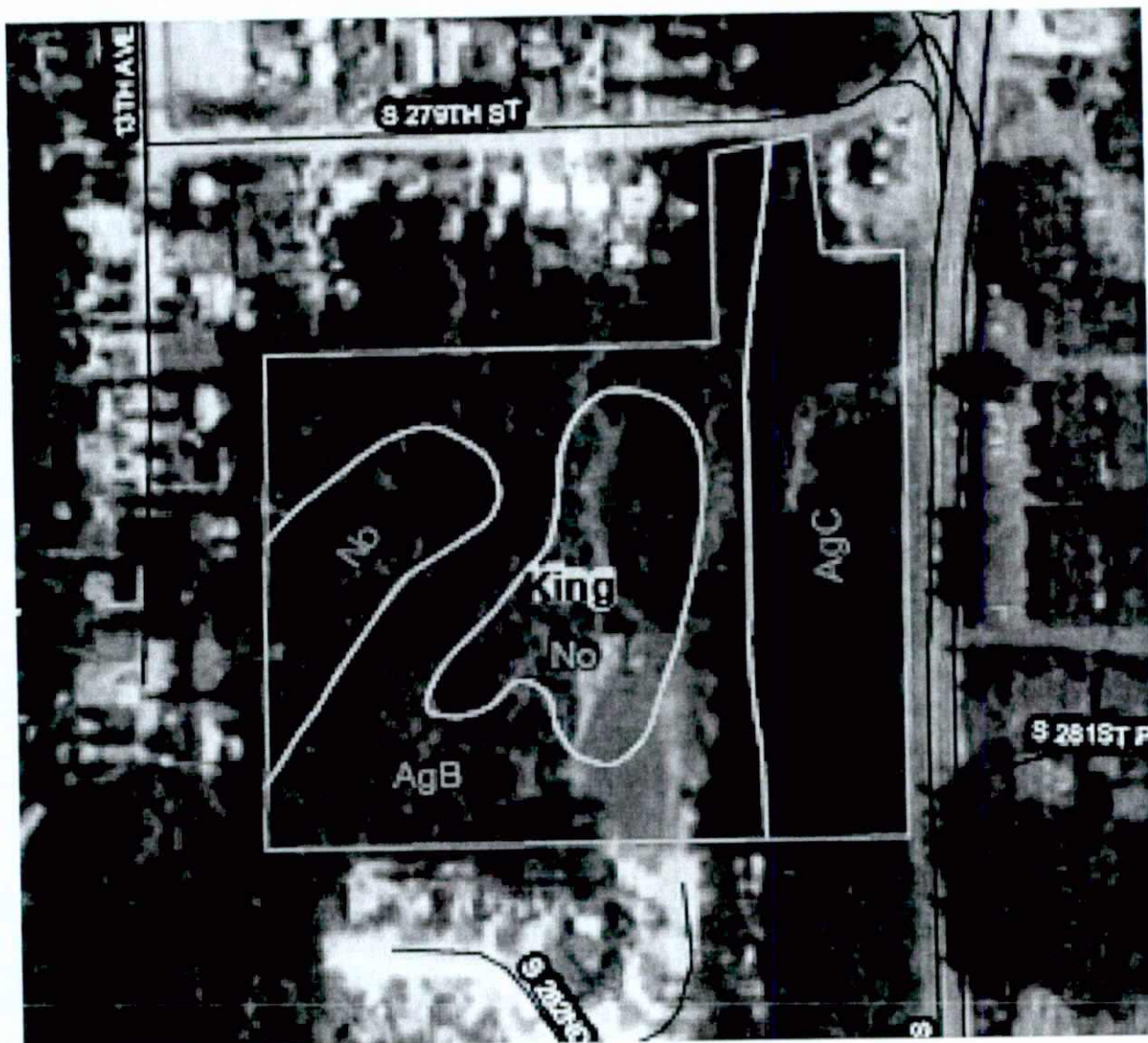
D.A.F.

SCALE:

N.T.S.

**FIGURE 2**

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NTS

| UNIT SYMBOL | UNIT NAME                                     | % OF SITE |
|-------------|-----------------------------------------------|-----------|
| AgB         | ALDERWOOD<br>GRAVELY SANDY<br>LOAM 0-6% SLOPE | 45        |
| AgC         | ALDERWOOD<br>GRAVELY SANDY<br>LOAM 0-6% SLOPE | 28        |
| No          | NORMA SANDY LOAM                              | 27        |

SEC. 32, TWP.22N., RGE. 4E., W.M.

SOILS MAP  
PACIFIC PLACE

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Kirkland, WA 98033  
Tel (425) 827-5874  
Fax (425) 822-7216

|           |         |           |
|-----------|---------|-----------|
| DWN. BY:  | DATE:   | JOB NO.   |
| DAF       | 11/2/06 | PACW-0001 |
| CHKD. BY: | SCALE:  | FIGURE 3  |
| D.A.F.    | N.T.S.  |           |







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## SECTION 2 CONDITIONS & REQUIREMENTS SUMMARY

The site is located within the Federal Way Community Planning Area and may be subject to special requirements contained in their plan. No critical drainage area Requirements apply to this site. The King County Basin Reconnaissance Summary Reports show that this site drains to collection point 18 of the Puget Sound Basin (see map in Appendix B)

### **King County Surface Water Design Manual Core Requirements:**

The 1998 King County Surface Water Design Manual Core and Special Requirements are listed below. Each condition is being met in the following manner:

1. Discharge at the Natural Location

Discharging will be in the natural location at the southwest corner of the site and a Level 2 flow control will regulate flow durations and peak flow rates onsite.

2. Off-site Analysis

The off-site drainage course has been analyzed and described in Section 3 of this TIR.

3. Flow Control

The project annexation agreement requires a Level 2 Flow Control. Calculations provided in Section 4 conform to the requirements set forth in the 1998 KCSWDM.

4. Conveyance System

All proposed conveyance systems conform to the 1998 KCSWDM requirements; see Section 6 of this TIR for additional information.

5. Temporary Erosion & Sediment Control

All proposed TESC measures conform to the 1998 KCSWDM requirements; see Section 8 of this TIR for additional information.

6. Maintenance & Operations

Maintenance and Operations Manual will be provided in Section 10 of this TIR.

7. Financial Guarantees & Liability

A bond quantity worksheet will be provided after the first review. The project owner will provide bonding as necessary.

8. Water Quality

Water quality calculations provided in this TIR conform to the 1998 KCSWDM requirements; see Section 4 for additional information.

**King County Surface Water Design Manual Special Requirements:**

1. Other Adopted Area-Specific Requirements

There are no other adopted area specific requirements.

2. Floodplain/Floodway Delineation

The site is not located in a floodplain or floodway.

3. Flood Protection Facilities

The site is not located in a floodplain or adjacent to a flood protection facility.

4. Source Control

This site does not meet the threshold for source control requirements; therefore source control requirements are not required.

5. Oil Control

This site does not meet the threshold for oil control requirements; therefore oil control requirements are not required.



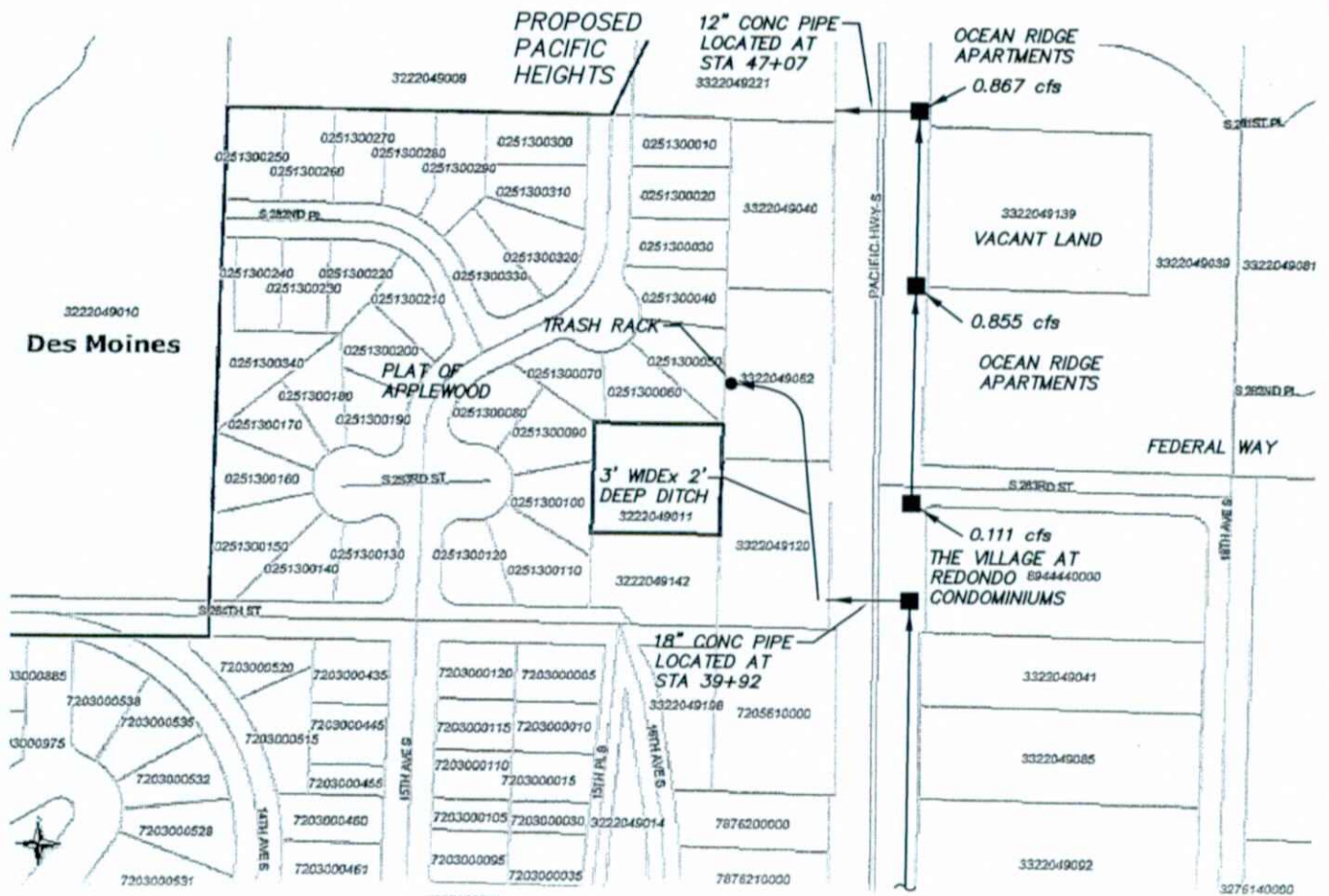
### SECTION 3 OFF-SITE ANALYSIS

The offsite analysis for the site consists of the upstream affects onto the site and downstream analysis of resultant discharge from the developed site, see Figure 4: Existing Site Map

#### Upstream Analysis

The proposed Pacific Heights development receives stormwater from the east in the form of two point source discharges and sheet flow at the eastern property line. The two point source discharges originate from the current construction of the WSDOT SR99 – HOV expansion project and the apartment and condominium complexes on the east side of SR99 (Pacific Hwy). The WSDOT SR99 – HOV Expansion project is the widening of SR99 from S. 284<sup>th</sup> St. to S. 272<sup>nd</sup> St., but for purposes this report, the focus and analysis will be directed to the discharge at the northeast corner and the southeast corner of the proposed site and station references are on the provided WSDOT plans in Appendix D.

Surface runoff originating south of the WSDOT project flows northward, where it discharges from an 18-inch Conc. Pipe located at Sta. 39+92, as shown on sheets D1 and DP1 in Appendix D. This discharge enters a 3-foot wide, 2-foot deep channel within vacant land, outside of WSDOT R/W and flows northward for approximately 400 feet where it enters into a catch basin with a trash rack, as shown in Figure 6: *Offsite Flow to Applewood*. This stormwater enters into the drainage system for the Plat of AppleWood, as shown in the AppleWood Development plans in Appendix D, which does not flow to the wetland in Pacific Heights as stated on page 14 and shown on Figure 2: Basin and TDA Map of the WSDOT SR99 Stormwater Report, located in Appendix D of this report.





Stormwater originating offsite east of SR99, primarily from the detention facilities of The Village at Redondo Condominiums and Ocean Ridge Apartments, gets conveyed through a parallel drainage system, separate from the Pacific Highway system, as described on page 12 of the SR99 Stormwater Report and discharges from a 12 inch concrete pipe at the southeast corner of the project site at station 47+07. It is assumed that the detention facilities for the Village at Redondo and Ocean Ridge have dead storage for water quality.

The drainage reports for these sites were unavailable. Some of the plans were obtained from the City of Federal Way, so the offsite flows from the apartment and condominium complexes were calculated off of the plans using KCRTS so that the data would be compatible with the modeling of the rest of the site. Some of the files are missing and the data is incomplete; however, most of it is there and our best estimates were used when any information was missing. The areas used to size the offsite detention pipes were not available and were recalculated off of the plans. In the Redondo Condominiums, the detention pipe drained into another detention pipe which existed when the condominiums were constructed. It is unknown and unclear as to what the purpose of the original detention pipe was and why another pipe was required. Data was unavailable for the control structure and so we estimated the groundcover and calculated the orifice size using the same design criteria as would have been used in 1989. It was then modeled in KCRTS. This gave us a reasonable, though approximate, discharge rate. The time series from the three detention systems were then added to determine the combined flow rate onto the project site. These calculations can be found in Appendix D.

Surface runoff from the portion of SR99 described as Basin A on pages 13 and 14 of the SR99 Stormwater Report gets conveyed to a detention facility, Vault A, and the controlled release enters a Water Quality Vault before being discharged from an 18-inch conc. pipe, located at Sta. 52+50, near the northeast corner of the proposed Pacific Heights development. The system was analyzed using MGS FLOOD, version 3.04 and stormwater detention facilities are designed according to WSDOT's 2004 Highway Runoff Manual which requires the post-developed peak flows to match the existing peak flows from 50 percent of the 2-year to the 50-year storm peak flow. The MGS FLOOD printouts can be found in Appendix D. The controlled discharges are summarized in the following table.

| <b>Storm Event<br/>Pre-Dev./Post-Dev.</b> | <b>Basin A<br/>(cfs)</b> |
|-------------------------------------------|--------------------------|
| <b>2-yr/2-yr mitigated</b>                | 0.757/ <b>0.438</b>      |
| <b>5-yr/5-yr mitigated</b>                | 0.942/ <b>0.779</b>      |
| <b>10-yr/10-yr mitigated</b>              | 1.122/ <b>0.950</b>      |
| <b>25-yr/25-yr mitigated</b>              | 1.354/ <b>1.154</b>      |
| <b>50-yr/50-yr mitigated</b>              | 1.663/ <b>1.211</b>      |
| <b>100-yr/100-yr mitigated</b>            | 1.790/ <b>1.459</b>      |

It is believed that sheet flow from Pacific Highway, prior to WSDOT construction, sheet flowed eastward into the existing drainage ditch along the east side of SR99 and was conveyed northward, and in fact originally did not discharge to the wetland as suggested on page 14 of the WSDOT SR99 report and therefore is not used in the developed Pacific Heights detention/water quality calculations.



**Downstream Analysis**

Initially this property was owned by Donald and Marie Tavis and a Level 1 Drainage Report was created by Eastside Consultants, Inc., see Appendix B for the report.

## SECTION 4 FLOW CONTROL & WATER QUALITY ANALYSIS AND DESIGN

The calculations are based on the 1998 King County Surface Water Design Manual (KCSWDM) requirements. The site is located in the City of Des Moines. Level 2 Flow Control is required for this site. Water quality features for the site will be designed from the Basic Water Quality Menu. The site is underlain by till soils and is located in the SeaTac rainfall region with a scale factor of 1.0

### **Part A – Existing Site Hydrology**

The undeveloped site contains a Class 2 and a Class 1(b) Wetland, a gravel access road and a small shed. Existing vegetation includes evergreen and deciduous trees, brush and pasture grasses. The existing topography slopes generally to the west with grades from 5 percent to 40 percent with the steeper grades located along the eastern property line. Soils on site are classified as Alderwood gravelly sandy loam (AgB), 0 to 6 percent slopes, Alderwood gravelly sandy loam (AgC), 6 to 15 percent slopes, Norma sandy loam (No). The Alderwood soils are hydrologic class C and the Norma is class D per the SCS Soils Map.

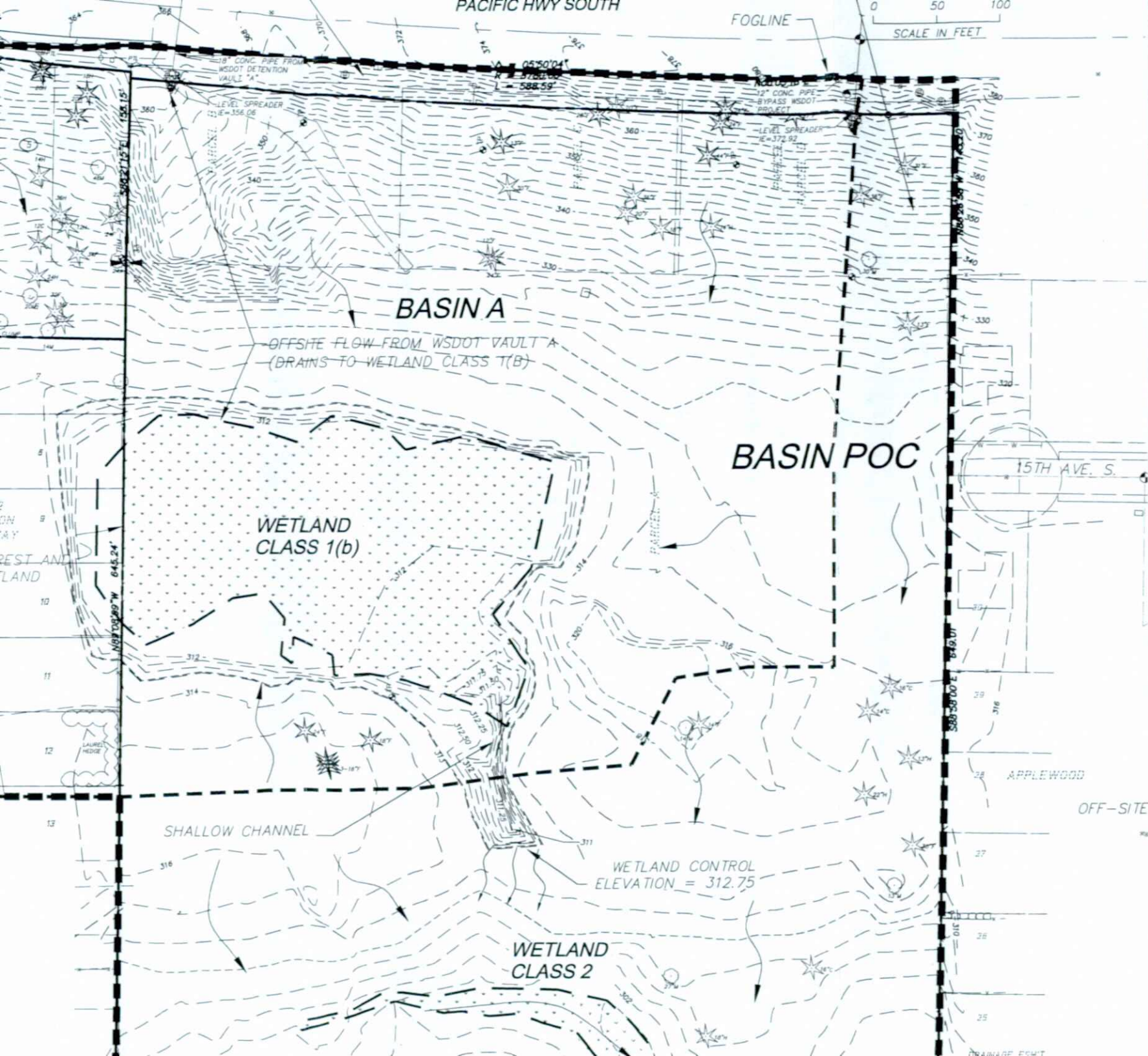
The existing site is broken into two on site basins for analysis: Basin A, which drains to the wetland, and Basin POC, which is the point of compliance and includes the entire site. Offsite flow from the SR99 Vault A is added to the Basin A time series as it drains into the wetland. The vault was originally modeled using MGS Flood but for our purposes it has been re-modeled in KCRTS in order to have compatible files. Offsite flow from the southeast pipe, which includes the discharge from detention facilities on the east side of SR99, is added to the point-of-compliance. Please refer to **Figure 7: Existing Drainage Basin Map** and **Figure 8: Existing Drainage Flow Path Map**.

Basin A, the wetland basin, is approximately 11.01 acres in size. This basin is comprised of the portion of the project site and offsite areas to the north adjacent to Pacific Highway and the vault in Pacific Highway that contribute to the Class 1(b) Wetland, north-centrally located on the site. The north offsite area was estimated using the King County GIS program, IMAp, that had the aerial, contour, and parcel layers on for reference, because survey data is not available for this area. The extension of the wetland into this offsite area was estimated and the impervious areas were traced based upon a scaled aerial photo. The wetland basin, which includes all known and estimated areas (i.e. wetland, impervious, forest, landscaping, etc.) will be the basis for determining the current wetland hydrology and maintaining hydrology once the site is developed. The flow to the wetland can be characterized as sheet flow. A channel overflow is located at the south west edge of the wetland. Wetland stormwater overflow continues west for approximately 50 feet where it enters a ditch and turns to sheet flow at the ridgeline of the southern wetland, located along the western property line. Stormwater flows through the wetland and exits the site near the southwest corner. Stormwater originating from the north east corner of the site and along S. 279<sup>th</sup> St. gets captured in catch basins located within the right-of-way and is conveyed southward in the existing enclosed drainage system and is not affected by the proposed development. Please see **Figure 7: Existing Drainage Basin Map**, **Figure 8: Existing Drainage Flow Path Map** and **Table 4.2**.









| NO. | DATE | REVISION |
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| 1   |      |          |
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|                 |                          |
|-----------------|--------------------------|
| DESIGN GROUP    | HAROLD F. PETERSON, P.E. |
| PROJECT MANAGER | DEAN A. FURR             |
| DESIGNER        | DEAN A. FURR             |
| CADD            | H.F.P.                   |
| CHECKED         | 11/1/2006                |
| DATE            | 11/1/2006                |
| FILE NAME       | FG8PACW01.dwg            |

EXISTING DRAINAGE PATH MAP

PACIFIC WEST DEVELOPMENT

**PACIFIC PLACE**

KING COUNTY

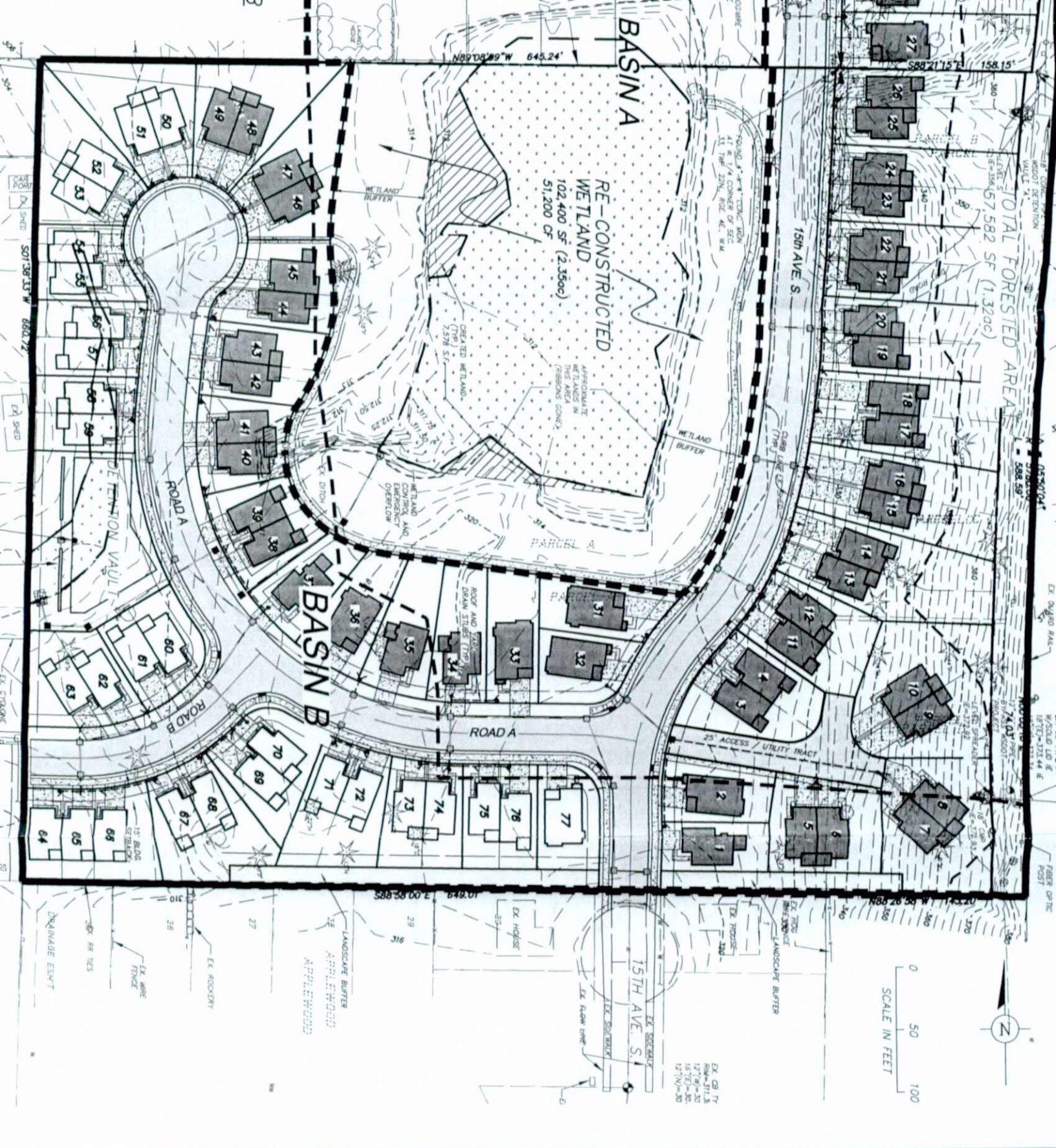
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**PETERSON**  
CONSULTING  
ENGINEERS

4010 Lake Washington





# DEVELOPED DRAINAGE BASIN MAP

PACIFIC WEST DEVELOPMENT

## **PACIFIC PLACE**

KING COUNTY

WASHINGTON



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**PETERSON**  
CONSULTING  
ENGINEERS

4010 Lake Washington

DESIGN GROUP  
HAROLD F. PETERSON, P.E.  
PROJECT MANAGER:  
DAFLURR  
DESIGNED:  
DAF  
CADD:  
DAF  
CHECKED:  
11/2/2006  
DATE:  
PACW-0001\_EX445.dwg  
FILE NAME:

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| 31  |      |          |







Analysis of the pre-developed wetland hydrology was performed using KCRTS software, and running the existing conditions time series through a single outlet reservoir. As required by the City of Des Moines, the pre-developed hydrology must be maintained after development, therefore, it is necessary to obtain the pre-developed durations for comparison. The modeled reservoir areas and volumes are shown in **Table 4.1**. The pre-developed 100-year peak flow into the wetland is 2.46 cfs, compared to the smaller 2.38 cfs 100-year peak flow exiting the wetland. The difference in flows is attributed to the wetlands ability to attenuate flows. The wetland outlet was modeled using a hydraulics modeling software, FlowMaster, v6.1, by Haestad Methods, Inc. The trapezoidal outlet has an estimated bottom length of 44 feet and 15:1 side slopes. The maximum flow height exiting the channel was determined to be 0.10 feet as determined by KCRTS. KCRTS output can be found in **Appendix A**

Table 4.1 Pre-developed Wetland Stage Storage

| Dead Storage |       |           |             |
|--------------|-------|-----------|-------------|
| Elevation    | Stage | Area (sf) | Volume (cf) |
| 311          | -1.75 | 2         | 0           |
| 311.25       | -1.5  | 184       | 23          |
| 311.5        | -1.25 | 816       | 125         |
| 311.75       | -1    | 1,891     | 338         |
| 312          | -0.75 | 58,752    | 7,580       |
| 312.25       | -0.5  | 77,360    | 17,014      |
| 312.5        | -0.25 | 84,070    | 20,178      |
| 312.75       | 0     | 90,360    | 21,803      |
| Live Storage |       |           |             |
| Elevation    | Stage | Area (sf) | Volume (cf) |
| 312.75       | 0     | 90,360    | 0           |
| 312.85       | 0.1   | 91,778    | 9036        |

The total runoff from the areas on and offsite, or point of compliance (POC), will be used as the basis for the total allowable developed flow from the proposed vault and the reconstructed wetland. The POC area consists of the project site, including the wetland basin, Basin A, the Class 2 Wetland and all off-site areas to the north previously described, as well as the eastern area between the eastern property line and the south bound lane fog line of Pacific Highway South, the discharge from Vault A in Pacific Highway South, and the discharge from the pipe near the southeast corner of the site which includes runoff from three apartment and condominium complexes. The POC hydrology can be characterized as mostly sheet flow with some channel flow between the wetlands and from the outfall pipe from the Vault A. The general flow direction is east to west, where the stormwater exits the site at the western end of the Class 2 Wetland. Pacific Highway is superelevated such that runoff is directed to an enclosed drainage system along the east side of the paved surface and conveyed northward. See **Table 4.2**. Please note that the Vault A Basin areas and the offsite condominium and apartment areas are not included in the other basins as they are first routed through detention systems. The Vault A, Offsite Condominium/Apartment, and Basin B time series are summed to obtain the point of compliance time series. They are included in Appendix A.



Table 4.2 Existing Basins

| <b>Existing Basins:</b> (time series printouts are provided in Appendix A) |                  |                   |                 |              |                 |                 |
|----------------------------------------------------------------------------|------------------|-------------------|-----------------|--------------|-----------------|-----------------|
| Basin:                                                                     | Till forest (AC) | Till Pasture (AC) | Till Grass (AC) | Wetland (AC) | Impervious (AC) | Total Area (AC) |
| Basin A, Wetland                                                           | 8.27             | 0                 | 0.92            | 1.41         | 0.41            | 11.01           |
| Basin POC                                                                  | 13.13            | 0                 | 0.92            | 1.55         | 0.41            | 16.01           |

### **Part B – Developed Site Hydrology**

The developed hydrology is separated into two onsite basins. Basin A contains the developed areas draining to the remaining Class 1(b) wetland. This wetland will be expanded to mitigate for the removal of the other wetland. In addition to the areas directly contributing to the wetland, the two discharge pipes from SR99 will be routed to outfall into the developed wetland in order to meet the hydrological needs of the expanded wetland. The remainder of the site will drain directly to the vault. The discharge from the vault and the wetland is added to meet the point-of-compliance as set up in the existing conditions. Please refer to **Figure 9: Developed Drainage Basin Map** and **Figure 10: Developed Drainage Path Map**. See Table 4.3 and Appendix A for KCRTS input and output.

The developed wetland basin, Basin A, is approximately 7.08 acres and for purposes of maintaining wetland hydrology, stormwater will flow to the wetland from existing and developed areas. These tributary areas consist of the existing off-site areas to the north, roof drains from units 1-49, the outfall from Vault A in SR99, the outfall from three condominium and apartment complexes, and the reconstructed Class 1(b) wetland and its landscaped buffer. Surface runoff from these areas will enter dispersion trenches on the periphery of the wetland to provide equal dispersion of stormwater into the wetland and thereby eliminating point source discharges that could be detrimental to the wetland shoreline eco system. The reconstruction of the wetland is a result of the elimination of the smaller Class 2 wetland, as well as the need to provide additional storage to accommodate the larger flows from the developed sites roof drains. The additional 70,132 cubic feet of volume is the 0.64 feet, or 312.64 peak reservoir elevation, of additional volume above the existing 312.00 Dead Storage Elevation. The additional storage will be controlled by a notch weir control structure at the overflow structure located at the southwest corner of the wetland. The discharge bypasses the vault but is included in the point of compliance.

The areas draining to the wetland and the control structure were designed in accordance with the Reference Standards and Project Performance Standards for the Establishment of Depressional Flow-Through Wetlands in the Puget Lowlands of Western Washington. The main concerns in modifying wetland size and hydrology are flow durations and water level fluctuation (WLF).



In order to achieve the correct flow into the developed wetland, the existing wetland input time series was scaled up by 51%, which is the amount that the wetland will be enlarged by. The developed time series was determined by adding roof areas to approximate the scaled existing time series. The developed time series exceeds the existing scaled time series. This will ensure that the wetland has sufficient water. As there is standing water on site, inundation is not a concern; it is expected. The control structure will ensure that the water level does not rise too much.

The outfall of the wetland will be controlled using a notch weir on a control structure. A 15" notch weir will be used on an 18" riser pipe, resulting in a 100-year water surface of stage 0.64'. This is higher than the pre-developed water surface of 0.10'; however, it is still less than the target mean annual WLF of 0.7' as laid out in the Depressional Flow-Through Wetlands manual. All of the KCRTS files can be found in **Appendix A**.

Basin B, approximately 8.94 acres, consists of all developed onsite and offsite areas tributary to the detention vault. The onsite tributary areas are generally everything outside of the wetland buffer, such as landscaping/grass, all paved surfaces, all roof areas not draining to the wetland, and the forested area along the eastern property line. The offsite areas include the connection of the proposed 15<sup>th</sup> Ave. S. and S. 279<sup>th</sup> St., as well as the eastern area between the eastern property line and the south bound lane fog line of Pacific Hwy South. Surface runoff from these areas will be collected in an underground storm drain pipe system, and conveyed to a detention vault located in the detention tract at the southwest corner of the site. Discharge from the pond will enter a dispersion trench along the western property line within the tract while maintaining a 25 foot vegetated path to the property line. Please see **Figure 5: Developed Conditions Map**.

The detention vault was modeled using KCRTS, and Level 2 control is required, per 1998 King County Storm Water Design Manual. The summation of flow durations from the vault and developed wetland must match the pre-developed (POC) duration, previously described in the existing site hydrology section of this report. However, the POC is downstream of the vault; therefore, the time series for the developed wetland outflow will be input to KCRTS as a bypass flow time series. The summation of the flow durations, d-poc, on the duration graph closely matches the pre-developed flow duration, as shown on the duration plot.

Table 4.3 Developed Basins

| Developed Basins: (time series printouts are provided in Appendix A) |                  |                   |                 |              |                 |                 |
|----------------------------------------------------------------------|------------------|-------------------|-----------------|--------------|-----------------|-----------------|
| Basin:                                                               | Till forest (AC) | Till Pasture (AC) | Till Grass (AC) | Wetland (AC) | Impervious (AC) | Total Area (AC) |
| Basin A                                                              | 1.16             | 0                 | 1.74            | 2.35         | 1.83            | 7.08            |
| Basin B                                                              | 1.32             | 0                 | 4.52            | 0            | 3.10            | 8.94            |

### **Part C – Performance Standards**

The performance standards for this site are as follows:

Table 4.4 Performance Standards

| Category | Performance Standard | Source |
|----------|----------------------|--------|
|----------|----------------------|--------|

|                         |                                                                                |                    |
|-------------------------|--------------------------------------------------------------------------------|--------------------|
| Flow Control            | Level 2 Flow Control                                                           | 1998 KCSWDM        |
| Conveyance System       | Provide Conveyance for 25-year developed storm event, check capacity for event | 1998 KCSWDM        |
| Water Quality Treatment | Basin WQ Menu, Wet Vault integral to detention vault                           | 1998 KCSWDM        |
| Wetland Hydrology       | Provide hydrology for the 100-year pre-developed storm event                   | City of Des Moines |

#### **Part D – Flow Control System**

The proposed detention vault has been sized using the Level 2 Flow Control standards. The outflow from the vault will match the developed discharge durations to the pre-developed discharge durations of 50 percent of the 2-year up to the 50-year return period as well as the 2- and 10- year peak flows. The pre-developed and developed time series and the routing information from the KCRTS computer program can be found in **Appendix A**.

The calculated live portion of the detention vault is 70 feet wide by 60.00 feet long and 10.30 feet deep with an active storage volume of 43,260 sf.



**Part E – Water Quality System**

Water quality treatment will be provided by a wet vault per the Basic Water Quality Menu. The water quality volume will be provided by dead storage in the detention vault.

The volume was sized using the method laid out in Section 6.4.1.1. The calculations are shown below.

Step 1: Identify required wetpool volume factor ( $f$ ).

$$f = 3$$

Step 2: Determine rainfall ( $R$ ) for the mean annual storm.

$$R = 0.039'$$

Step 3: Calculate runoff from the mean annual storm ( $V_r$ ) for the developed site.

$$V_r = (0.9 \cdot A_i + 0.25 \cdot A_{tg} + 0.10 \cdot A_{tf}) \cdot 0.039'$$

$$V_r = (0.9 \cdot 134,924 + 0.25 \cdot 196,891 + 0.10 \cdot 57,582) \cdot 0.039'$$
$$= 6,880 \text{ cf}$$

Step 4: Calculate wetpool volume ( $V_b$ )

$$V_b = 6,880 \cdot 3$$

$$= 20,640 \text{ cf}$$

The minimum required dead storage for the wetpool is 20,640 cf with a minimum depth of 4 feet as required in the 1998 KCSWDM.

## **SECTION 5      CONVEYANCE SYSTEM ANALYSIS AND DESIGN**

The capacity of the conveyance system was analyzed using using a hydraulics modeling software, FlowMaster, v6.1, by Haestad Methods, Inc. A 12 inch, N12 pipe at 0.50 percent slope, has the capacity of 2.64 cfs. This is larger than the 100 year flows of 2.51 cfs flowing to the vault. The 100-year flow to the wetland is larger at 2.80 cfs. Backwater calculations and pipe sizing will be done in the engineering phase of the project. FlowMaster output can be found in **Appendix A**.



## **SECTION 6 SPECIAL REPORTS AND STUDIES**

A Level I Drainage Report has been prepared by Eastside Consultants, and is located in Appendix B of this report

## **SECTION 7    OTHER PERMITS**

Typical grading, R/W, and building permits, however, a permit for Forest Practices will also be obtained.



## **SECTION 8     ESC ANALYSIS AND DESIGN**

A Temporary Erosion and Sediment Control (TESC) plan will be developed for the site during the construction documents phase. The TESC plan will be in accordance with the 1998 KCSWDM.

## **SECTION 9     BOND QUANTITIES AND FACILITY SUMMARIES**

A bond quantity worksheet will be submitted during the final design phase.

## **SECTION 10 OPERATIONS AND MAINTENANCE MANUAL**

The typical operations and maintenance manual is included in the following pages.



# APPENDIX A

## MAINTENANCE STANDARDS FOR PRIVATELY MAINTAINED DRAINAGE FACILITIES

### NO. 1 - DETENTION PONDS

| Maintenance Component       | Defect                      | Conditions When Maintenance Is Needed                                                                                                                                                                                                                                                   | Results Expected When Maintenance Is Performed                                                                                                                                           |
|-----------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General                     | Trash & Debris              | Any trash and debris which exceed 1 cubic foot per 1,000 square feet (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.                                             | Trash and debris cleared from site.                                                                                                                                                      |
|                             | Poisonous Vegetation        | Any poisonous or nuisance vegetation which may constitute a hazard to County personnel or the public.                                                                                                                                                                                   | No danger of poisonous vegetation where County personnel or the public might normally be. (Coordination with Seattle-King County Health Department)                                      |
|                             | Pollution                   | Oil, gasoline, or other contaminants of one gallon or more or any amount found that could: 1) cause damage to plant, animal, or marine life; 2) constitute a fire hazard; or 3) be flushed downstream during rain storms.                                                               | No contaminants present other than a surface film. (Coordination with Seattle/King County Health Department)                                                                             |
|                             | Unmowed Grass/ Ground Cover | If facility is located in private residential area, mowing is needed when grass exceeds 18 inches in height. In other areas, the general policy is to make the pond site match adjacent ground cover and terrain as long as there is no interference with the function of the facility. | When mowing is needed, grass/ground cover should be mowed to 2 inches in height. Mowing of selected higher use areas rather than the entire slope may be acceptable for some situations. |
|                             | Rodent Holes                | Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.                                                                                                                                              | Rodents destroyed and dam or berm repaired. (Coordination with Seattle/King County Health Department)                                                                                    |
|                             | Insects                     | When insects such as wasps and hornets interfere with maintenance activities.                                                                                                                                                                                                           | Insects destroyed or removed from site.                                                                                                                                                  |
|                             | Tree Growth                 | Tree growth does not allow maintenance access or interferes with maintenance activity (i.e., slope mowing, silt removal, vactoring, or equipment movements). If trees are not interfering with access, leave trees alone.                                                               | Trees do not hinder maintenance activities. Selectively cultivate trees such as alders for firewood.                                                                                     |
| Side Slopes of Pond         | Erosion                     | Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.                                                                                                                                                              | Slopes should be stabilized by using appropriate erosion control measure(s); e.g., rock reinforcement, planting of grass, compaction.                                                    |
| Storage Area                | Sediment                    | Accumulated sediment that exceeds 10% of the designed pond depth.                                                                                                                                                                                                                       | Sediment cleaned out to designed pond shape and depth; pond reseeded if necessary to control erosion.                                                                                    |
| Pond Dikes                  | Settlements                 | Any part of dike which has settled 4 inches lower than the design elevation.                                                                                                                                                                                                            | Dike should be built back to the design elevation.                                                                                                                                       |
| Emergency Overflow/Spillway | Rock Missing                | Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway. Rip-rap on inside slopes need not be replaced.                                                                              | Replace rocks to design standards.                                                                                                                                                       |

## NO. 4 - CONTROL STRUCTURE/FLOW RESTRICTOR

| Maintenance Component | Defect                                  | Condition When Maintenance is Needed                                                                                                   | Results Expected When Maintenance is Performed                                                    |
|-----------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| General               | Trash and Debris<br>(Includes Sediment) | Distance between debris build-up and bottom of orifice plate is less than 1-1/2 feet.                                                  | All trash and debris removed.                                                                     |
|                       | Structural Damage                       | Structure is not securely attached to manhole wall and outlet pipe structure should support at least 1,000 lbs of up or down pressure. | Structure securely attached to wall and outlet pipe.                                              |
|                       |                                         | Structure is not in upright position (allow up to 10% from plumb).                                                                     | Structure in correct position.                                                                    |
|                       |                                         | Connections to outlet pipe are not watertight and show signs of rust.                                                                  | Connections to outlet pipe are water tight; structure repaired or replaced and works as designed. |
|                       |                                         | Any holes—other than designed holes—in the structure.                                                                                  | Structure has no holes other than designed holes.                                                 |
| Cleanout Gate         | Damaged or Missing                      | Cleanout gate is not watertight or is missing.                                                                                         | Gate is watertight and works as designed.                                                         |
|                       |                                         | Gate cannot be moved up and down by one maintenance person.                                                                            | Gate moves up and down easily and is watertight.                                                  |
|                       |                                         | Chain leading to gate is missing or damaged.                                                                                           | Chain is in place and works as designed.                                                          |
|                       |                                         | Gate is rusted over 50% of its surface area.                                                                                           | Gate is repaired or replaced to meet design standards..                                           |
| Orifice Plate         | Damaged or Missing                      | Control device is not working properly due to missing, out of place, or bent orifice plate.                                            | Plate is in place and works as designed.                                                          |
|                       | Obstructions                            | Any trash, debris, sediment, or vegetation blocking the plate.                                                                         | Plate is free of all obstructions and works as designed.                                          |
| Overflow Pipe         | Obstructions                            | Any trash or debris blocking (or having the potential of blocking) the overflow pipe.                                                  | Pipe is free of all obstructions and works as designed.                                           |
| Manhole               |                                         | See "Closed Detention Systems" Standards No. 3                                                                                         | See "Closed Detention Systems" Standards No. 3                                                    |
| Catch Basin           |                                         | See "Catch Basins" Standards No. 5                                                                                                     | See "Catch Basins" Standards No. 5                                                                |



## NO. 5 - CATCH BASINS

| Maintenance Component | Defect                                       | Conditions When Maintenance is Needed                                                                                                                                          | Results Expected When Maintenance is performed                                          |
|-----------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| General               | Trash & Debris<br>(Includes Sediment)        | Trash or debris of more than 1/2 cubic foot which is located immediately in front of the catch basin opening or is blocking capacity of the basin by more than 10%             | No Trash or debris located immediately in front of catch basin opening.                 |
|                       |                                              | Trash or debris (in the basin) that exceeds 1/3 the depth from the bottom of basin to invert the lowest pipe into or out of the basin.                                         | No trash or debris in the catch basin.                                                  |
|                       |                                              | Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.                                                                                              | Inlet and outlet pipes free of trash or debris.                                         |
|                       |                                              | Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).                                                           | No dead animals or vegetation present within the catch basin.                           |
|                       |                                              | Deposits of garbage exceeding 1 cubic foot in volume                                                                                                                           | No condition present which would attract or support the breeding of insects or rodents. |
|                       | Structure Damage to<br>Frame and/or Top Slab | Corner of frame extends more than 3/4 inch past curb face into the street (If applicable).                                                                                     | Frame is even with curb.                                                                |
|                       |                                              | Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (intent is to make sure all material is running into basin).                                      | Top slab is free of holes and cracks.                                                   |
|                       |                                              | Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab.                                                                    | Frame is sitting flush on top slab.                                                     |
|                       | Cracks in Basin Walls/<br>Bottom             | Cracks wider than 1/2 inch and longer than 3 feet, any evidence of soil particles entering catch basin through cracks, or maintenance person judges that structure is unsound. | Basin replaced or repaired to design standards.                                         |
|                       |                                              | Cracks wider than 1/2 inch and longer than 1 foot at the joint of any inlet/ outlet pipe or any evidence of soil particles entering catch basin through cracks.                | No cracks more than 1/4 inch wide at the joint of inlet/outlet pipe.                    |
|                       | Sediment/<br>Misalignment                    | Basin has settled more than 1 inch or has rotated more than 2 inches out of alignment.                                                                                         | Basin replaced or repaired to design standards.                                         |



**NO. 5 - CATCH BASINS (CONTINUED)**

| Maintenance Component        | Defect                        | Conditions When Maintenance is Needed                                                                                                 | Results Expected When Maintenance is performed                           |
|------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Catch Basin Cover            | Fire Hazard                   | Presence of chemicals such as natural gas, oil and gasoline.                                                                          | No flammable chemicals present.                                          |
|                              | Vegetation                    | Vegetation growing across and blocking more than 10% of the basin opening.                                                            | No vegetation blocking opening to basin.                                 |
|                              |                               | Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.                      | No vegetation or root growth present.                                    |
|                              | Pollution                     | Nonflammable chemicals of more than 1/2 cubic foot per three feet of basin length.                                                    | No pollution present other than surface film.                            |
|                              | Cover Not in Place            | Cover is missing or only partially in place. Any open catch basin requires maintenance.                                               | Catch basin cover is closed                                              |
| Ladder                       | Locking Mechanism Not Working | Mechanism cannot be opened by on maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.            | Mechanism opens with proper tools.                                       |
|                              | Cover Difficult to Remove     | One maintenance person cannot remove lid after applying 80 lbs. of lift; intent is keep cover from sealing off access to maintenance. | Cover can be removed by one maintenance person.                          |
|                              | Ladder Rungs Unsafe           | Ladder is unsafe due to missing rungs, misalignment, rust, cracks, or sharp edges.                                                    | Ladder meets design standards and allows maintenance person safe access. |
| Metal Grates (If Applicable) |                               | Grate with opening wider than 7/8 inch.                                                                                               | Grate opening meets design standards.                                    |
|                              | Trash and Debris              | Trash and debris that is blocking more than 20% of grate surface.                                                                     | Grate free of trash and debris.                                          |
|                              | Damaged or Missing.           | Grate missing or broken member(s) of the grate.                                                                                       | Grate is in place and meets design standards.                            |

**NO. 6 DEBRIS BARRIERS (E.G., TRASH RACKS)**

| Maintenance Components | Defect                 | Condition When Maintenance is Needed                                           | Results Expected When Maintenance is Performed. |
|------------------------|------------------------|--------------------------------------------------------------------------------|-------------------------------------------------|
| General                | Trash and Debris       | Trash or debris that is plugging more than 20% of the openings in the barrier. | Barrier clear to receive capacity flow.         |
| Metal                  | Damaged/ Missing Bars. | Bars are bent out of shape more than 3 inches.                                 | Bars in place with no bends more than 3/4 inch. |
|                        |                        | Bars are missing or entire barrier missing.                                    | Bars in place according to design.              |
|                        |                        | Bars are loose and rust is causing 50% deterioration to any part of barrier.   | Repair or replace barrier to design standards.  |

## NO. 7 - ENERGY DISSIPATERS

| Maintenance Components | Defect                                            | Conditions When Maintenance is Needed                                                                                                                                     | Results Expected When Maintenance is Performed.      |
|------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <u>External:</u>       |                                                   |                                                                                                                                                                           |                                                      |
| Rock Pad               | Missing or Moved Rock                             | Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil.                                                       | Replace rocks to design standards.                   |
| Dispersion Trench      | Pipe Plugged with Sediment                        | Accumulated sediment that exceeds 20% of the design depth.                                                                                                                | Pipe cleaned/ flushed so that it matches design.     |
|                        | Not Discharging Water Properly                    | Visual evidence of water discharging at concentrated points along trench (normal condition is a "sheet flow" of water along trench). Intent is to prevent erosion damage. | Trench must be redesigned or rebuilt to standards.   |
|                        | Perforations Plugged.                             | Over 1/2 of perforations in pipe are plugged with debris and sediment.                                                                                                    | Clean or replace perforated pipe.                    |
|                        | Water Flows Out Top of "Distributor" Catch Basin. | Maintenance person observes water flowing out during any storm less than the design storm or its causing or appears likely to cause damage.                               | Facility must be rebuilt or redesigned to standards. |
|                        | Receiving Area Over-Saturated                     | Water in receiving area is causing or has potential of causing landslide problems.                                                                                        | No danger of landslides.                             |
| <u>Internal:</u>       |                                                   |                                                                                                                                                                           |                                                      |
| Manhole/ Chamber       | Worn or Damaged Post. Baffles, Side of Chamber    | Structure dissipating flow deteriorates to 1/2 or original size or any concentrated worn spot exceeding one square foot which would make structure unsound.               | Replace structure to design standards.               |
|                        | Other Defects                                     | See "Catch Basins" Standard No. 5                                                                                                                                         | See "Catch Basins" Standard No. 5                    |

**NO. 8 - FENCING**

| Maintenance Components | Defect                                   | Conditions When Maintenance is Needed                                                               | Results Expected When Maintenance is Performed                          |
|------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| General                | Missing or Broken Parts                  | Any defect in the fence that permits easy entry to a facility.                                      | Parts in place to provide adequate security.                            |
|                        | Erosion                                  | Erosion more than 4 inches high and 12-18 inches wide permitting an opening under a fence.          | No opening under the fence that exceeds 4 inches in height.             |
| Wire Fences            | Damaged Parts                            | Post out of plumb more than 6 inches.                                                               | Post plumb to within 1-1/2 inches.                                      |
|                        |                                          | Top rails bent more than 6 inches.                                                                  | Top rail free of bends greater than 1 inch.                             |
|                        |                                          | Any part of fence (including post, top rails, and fabric) more than 1 foot out of design alignment. | Fence is aligned and meets design standards.                            |
|                        |                                          | Missing or loose tension wire.                                                                      | Tension wire in place and holding fabric.                               |
|                        | Deteriorated Paint or Protective Coating | Missing or loose barbed wire that is sagging more than 2-1/2 inches between posts.                  | Barbed wire in place with less than 3/4 inch sag between post.          |
|                        |                                          | Extension arm missing, broken, or bent out of shape more than 1 1/2 inches.                         | Extension arm in place with no bends larger than 3/4 inch.              |
|                        | Openings in Fabric                       | Part or parts that have a rusting or scaling condition that has affected structural adequacy.       | Structurally adequate posts or parts with a uniform protective coating. |
|                        |                                          | Openings in fabric are such that an 8-inch-diameter ball could fit through.                         | No openings in fabric.                                                  |

**NO. 9 - GATES**

| Maintenance Component | Defect                     | Conditions When Maintenance is Needed                                                               | Results Expected When Maintenance is Performed   |
|-----------------------|----------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------|
| General               | Damaged or Missing Members | Missing gate or locking devices.                                                                    | Gates and Locking devices in place.              |
|                       |                            | Broken or missing hinges such that gate cannot be easily opened and closed by a maintenance person. | Hinges intact and lubed. Gate is working freely. |
|                       |                            | Gate is out of plumb more than 6 inches and more than 1 foot out of design alignment.               | Gate is aligned and vertical.                    |
|                       | Openings in Fabric         | Missing stretcher bar, stretcher bands, and ties.                                                   | Stretcher bar, bands and ties in place.          |
|                       |                            | See "Fencing" Standard No. 8                                                                        | See "Fencing" Standard No. 8                     |



**NO. 10 - CONVEYANCE SYSTEMS (PIPES & DITCHES)**

| Maintenance Component              | Defect                                               | Conditions When Maintenance is Needed                                                           | Results Expected When Maintenance is Performed                               |
|------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Pipes                              | Sediment & Debris                                    | Accumulated sediment that exceeds 20% of the diameter of the pipe.                              | Pipe cleaned of all sediment and debris.                                     |
|                                    | Vegetation                                           | Vegetation that reduces free movement of water through pipes.                                   | All vegetation removed so water flows freely through pipes.                  |
|                                    | Damaged                                              | Protective coating is damaged; rust is causing more than 50% deterioration to any part of pipe. | Pipe repaired or replaced.                                                   |
|                                    |                                                      | Any dent that decreases the cross section area of pipe by more than 20%.                        | Pipe repaired or replaced.                                                   |
| Open Ditches                       | Trash & Debris                                       | Trash and debris exceeds 1 cubic foot per 1,000 square feet of ditch and slopes.                | Trash and debris cleared from ditches.                                       |
|                                    | Sediment                                             | Accumulated sediment that exceeds 20 % of the design depth.                                     | Ditch cleaned/ flushed of all sediment and debris so that it matches design. |
|                                    | Vegetation                                           | Vegetation that reduces free movement of water through ditches.                                 | Water flows freely through ditches.                                          |
|                                    | Erosion Damage to Slopes                             | See "Ponds" Standard No. 1                                                                      | See "Ponds" Standard No. 1                                                   |
|                                    | Rock Lining Out of Place or Missing (If Applicable). | Maintenance person can see native soil beneath the rock lining.                                 | Replace rocks to design standards.                                           |
| Catch Basins                       |                                                      | See "Catch Basins: Standard No. 5                                                               | See "Catch Basins" Standard No. 5                                            |
| Debris Barriers (e.g., Trash Rack) |                                                      | See "Debris Barriers" Standard No.6                                                             | See "Debris Barriers" Standard No. 6                                         |

**NO. 11 - GROUNDS (LANDSCAPING)**

| Maintenance Component | Defect               | Conditions When Maintenance is Needed                                                                                            | Results Expected When Maintenance is Performed                                      |
|-----------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| General               | Weeds (Nonpoisonous) | Weeds growing in more than 20% of the landscaped area (trees and shrubs only).                                                   | Weeds present in less than 5% of the landscaped area.                               |
|                       | Safety Hazard        | Any presence of poison ivy or other poisonous vegetation.                                                                        | No poisonous vegetation present in landscaped area.                                 |
|                       | Trash or Litter      | Paper, cans, bottles, totaling more than 1 cubic foot within a landscaped area (trees and shrubs only) of 1,000 square feet.     | Area clear of litter.                                                               |
| Trees and Shrubs      | Damaged              | Limbs or parts of trees or shrubs that are split or broken which affect more than 25% of the total foliage of the tree or shrub. | Trees and shrubs with less than 5% of total foliage with split or broken limbs.     |
|                       |                      | Trees or shrubs that have been blown down or knocked over.                                                                       | Tree or shrub in place free of injury.                                              |
|                       |                      | Trees or shrubs which are not adequately supported or are leaning over, causing exposure of the roots.                           | Tree or shrub in place and adequately supported; remove any dead or diseased trees. |

## NO. 12 - ACCESS ROADS/ EASEMENTS

| ance<br>ment | Defect                                 | Condition When Maintenance is Needed                                                                                                                              | Results Expected When Maintenance is Performed                                                                                             |
|--------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|              | Trash and Debris                       | Trash and debris exceeds 1 cubic foot per 1,000 square feet i.e., trash and debris would fill up one standards size garbage can.                                  | Roadway free of debris which could damage tires.                                                                                           |
|              | Blocked Roadway                        | Debris which could damage vehicle tires (glass or metal).                                                                                                         | Roadway free of debris which could damage tires.                                                                                           |
|              |                                        | Any obstruction which reduces clearance above road surface to less than 14 feet.                                                                                  | Roadway overhead clear to 14 feet high.                                                                                                    |
|              |                                        | Any obstruction restricting the access to a 10 to 12 foot width for a distance of more than 12 feet or any point restricting access to less than a 10 foot width. | Obstruction removed to allow at least a 12 foot access.                                                                                    |
| urface       | Settlement, Potholes, Mush Spots, Ruts | When any surface defect exceeds 6 inches in depth and 6 square feet in area. In general, any surface defect which hinders or prevents maintenance access.         | Road surface uniformly smooth with no evidence of settlement, potholes, mush spots, or ruts.                                               |
|              | Vegetation in Road Surface             | Weeds growing in the road surface that are more than 6 inches tall and less than 6 inches tall and less than 6 inches apart within a 400-square foot area.        | Road surface free of weeds taller than 2 inches.                                                                                           |
|              | Modular Grid Pavement                  | Build-up of sediment mildly contaminated with petroleum hydrocarbons.                                                                                             | Removal of sediment and disposal in keeping with Health Department recommendations for mildly contaminated soils or catch basin sediments. |
| s and        | Erosion Damage                         | Erosion within 1 foot of the roadway more than 8 inches wide and 6 inches deep.                                                                                   | Shoulder free of erosion and matching the surrounding road.                                                                                |
|              | Weeds and Brush                        | Weeds and brush exceed 18 inches in height or hinder maintenance access.                                                                                          | Weeds and brush cut to 2 inches in height or cleared in such a way as to allow maintenance access.                                         |

**C.) Wetponds**

| Maintenance Component | Defect                               | Condition When Maintenance is Needed                                                                                                                                                                                                                                                               | Results Expected When Maintenance is Performed                                                                                                         |
|-----------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wetpond               | Vegetation                           | Vegetation such as grass and weeds need to be mowed when it starts to impede aesthetics of pond. Mowing is generally required when height exceeds 18-inches. Mowed vegetation should be removed from areas where it could enter the pond, either when the pond level rises, or by rainfall runoff. | Vegetation should be mowed to 4 to 5 inches in height. Trees and bushes should be removed where they are interfering with pond maintenance activities. |
|                       | Trash and Debris                     | Accumulation that exceeds 1 CF per 1000-SF of pond area.                                                                                                                                                                                                                                           | Trash and debris removed from pond.                                                                                                                    |
|                       | Inlet/ Outlet Pipe                   | Inlet/ Outlet pipe clogged with sediment and/ or debris material.                                                                                                                                                                                                                                  | No clogging or blockage in the inlet and outlet piping.                                                                                                |
|                       | Sediment Accumulation in Pond Bottom | Sediment accumulations in pond bottom that exceeds the depth of sediment zone plus 6-inches, usually the first cell.                                                                                                                                                                               | Removal of sediment from pond bottom.                                                                                                                  |
|                       | Oil Sheen on Water                   | Prevalent and visible oil sheen.                                                                                                                                                                                                                                                                   | Removal of sediment from pond bottom.                                                                                                                  |
|                       | Erosion                              | Erosion of the pond's side slopes and/ or scouring of the pond bottom, that exceeds 6-inches, or where continued erosion is prevalent.                                                                                                                                                             | Slopes should be stabilized by using proper erosion control measures, and repair methods.                                                              |
|                       | Settlement of Pond Dike/ Berm        | Any part of these components that has settled 4-inches or lower than the design elevation, or inspector determines dike/ berm is unsound.                                                                                                                                                          | Dike/ berm is repaired to specifications.                                                                                                              |
|                       | Rock Window                          | Rock window is clogged with sediment.                                                                                                                                                                                                                                                              | Window is free of sediment and debris.                                                                                                                 |
|                       | Overflow Spillway                    | Rock is missing and soil is exposed at top of spillway or outside slope.                                                                                                                                                                                                                           | Replace rocks to specifications.                                                                                                                       |



# **APPENDIX A**

# PRE-DEVELOPED POINT OF COMPLIANCE

POC-EX.pks

Flow Frequency Analysis  
Time Series File:poc-ex.tsf  
Project Location:Sea-Tac

| ---Annual<br>Flow Rate<br>(CFS) | Peak<br>Rank | Flow Rates---<br>Time of Peak |
|---------------------------------|--------------|-------------------------------|
| 2.32                            | 3            | 2/09/01 15:00                 |
| 0.914                           | 7            | 1/05/02 17:00                 |
| 2.42                            | 2            | 2/27/03 8:00                  |
| 0.672                           | 8            | 8/26/04 3:00                  |
| 1.36                            | 6            | 1/05/05 8:00                  |
| 2.23                            | 4            | 1/18/06 16:00                 |
| 2.16                            | 5            | 11/24/06 4:00                 |
| 4.63                            | 1            | 1/09/08 7:00                  |
| Computed Peaks                  |              |                               |

| -----Flow Frequency Analysis----- |      |                  |       |
|-----------------------------------|------|------------------|-------|
| - - Peaks - -                     | Rank | Return<br>Period | Prob  |
| 4.63                              | 1    | 100.00           | 0.990 |
| 2.42                              | 2    | 25.00            | 0.960 |
| 2.32                              | 3    | 10.00            | 0.900 |
| 2.23                              | 4    | 5.00             | 0.800 |
| 2.16                              | 5    | 3.00             | 0.667 |
| 1.36                              | 6    | 2.00             | 0.500 |
| 0.914                             | 7    | 1.30             | 0.231 |
| 0.672                             | 8    | 1.10             | 0.091 |
| 3.89                              |      | 50.00            | 0.980 |

POC.exc

KCRTS Program...File Directory:

C:\KC\_SWDM\KC\_DATA\

[C] CREATE a new Time Series

ST

|       |      |          |                 |
|-------|------|----------|-----------------|
| 13.13 | 0.00 | 0.000000 | Till Forest     |
| 0.00  | 0.00 | 0.000000 | Till Pasture    |
| 0.92  | 0.00 | 0.000000 | Till Grass      |
| 0.00  | 0.00 | 0.000000 | Outwash Forest  |
| 0.00  | 0.00 | 0.000000 | Outwash Pasture |
| 0.00  | 0.00 | 0.000000 | Outwash Grass   |
| 1.55  | 0.00 | 0.000000 | Wetland         |
| 0.41  | 0.00 | 0.000000 | Impervious      |

EXIST.TSF

T

1.00000

T

[T] Enter the Analysis TOOLS Module

[P] Compute PEAKS and Flow Frequencies

exist.tsf

EXIST.PKS

[R] RETURN to Previous Menu

[X] eXit KCRS Program



pwetin.pks

Flow Frequency Analysis  
 Time Series File:pwetin.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 1.42 3 2/09/01 3:00  
 0.408 7 1/05/02 16:00  
 1.61 2 2/27/03 7:00  
 0.239 8 8/23/04 23:00  
 0.818 6 1/05/05 8:00  
 1.31 4 1/18/06 16:00  
 1.20 5 11/24/06 3:00  
 2.46 1 1/09/08 7:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) Period  
 2.46 1 100.00 0.990  
 1.61 2 25.00 0.960  
 1.42 3 10.00 0.900  
 1.31 4 5.00 0.800  
 1.20 5 3.00 0.667  
 0.818 6 2.00 0.500  
 0.408 7 1.30 0.231  
 0.239 8 1.10 0.091  
 2.18 50.00 0.980

pwetout.pks

Flow Frequency Analysis  
 Time Series File:pwetout.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 1.31 3 2/09/01 5:00  
 0.350 7 1/06/02 6:00  
 1.36 2 2/27/03 9:00  
 0.231 8 8/24/04 0:00  
 0.668 6 1/05/05 9:00  
 1.16 4 1/18/06 17:00  
 1.12 5 11/24/06 5:00  
 2.38 1 1/09/08 9:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) (ft) Period  
 2.38 0.10 1 100.00 0.990  
 1.36 0.07 2 25.00 0.960  
 1.31 0.07 3 10.00 0.900  
 1.16 0.07 4 5.00 0.800  
 1.12 0.06 5 3.00 0.667  
 0.668 0.04 6 2.00 0.500  
 0.350 0.02 7 1.30 0.231  
 0.231 0.01 8 1.10 0.091  
 2.04 0.09 50.00 0.980

pwetin51.pks

Flow Frequency Analysis  
 Time Series File:pwetin51.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 2.13 3 2/09/01 3:00  
 0.617 7 1/05/02 16:00  
 2.43 2 2/27/03 7:00  
 0.361 8 8/23/04 23:00  
 1.23 6 1/05/05 8:00  
 1.97 4 1/18/06 16:00  
 1.82 5 11/24/06 3:00  
 3.72 1 1/09/08 7:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) Period  
 3.72 1 100.00 0.990  
 2.43 2 25.00 0.960  
 2.13 3 10.00 0.900  
 1.97 4 5.00 0.800  
 1.82 5 3.00 0.667  
 1.23 6 2.00 0.500  
 0.617 7 1.30 0.231  
 0.361 8 1.10 0.091  
 3.29 50.00 0.980



WLND.exc

KCRTS Program...File Directory:

C:\KC\_SWDM\KC\_DATA\

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 8.27 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 0.92 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 1.41 | 0.00 | 0.000000 | Wetland         |
| 0.41 | 0.00 | 0.000000 | Impervious      |

EXIST.tsf

T

1.00000

T

[T] Enter the Analysis TOOLS Module

[P] Compute PEAKS and Flow Frequencies

exist.tsf

EXIST.pks

[R] RETURN to Previous Menu

[X] exit KCRTS Program

exist.pks

Flow Frequency Analysis  
 Time Series File:exist.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 1.16 2 2/09/01 15:00  
 0.371 7 1/05/02 16:00  
 0.990 3 2/28/03 3:00  
 0.120 8 8/26/04 2:00  
 0.491 6 1/05/05 8:00  
 0.776 4 1/18/06 16:00  
 0.706 5 11/24/06 4:00  
 1.64 1 1/09/08 9:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) Period  
 1.64 1 100.00 0.990  
 1.16 2 25.00 0.960  
 0.990 3 10.00 0.900  
 0.776 4 5.00 0.800  
 0.706 5 3.00 0.667  
 0.491 6 2.00 0.500  
 0.371 7 1.30 0.231  
 0.120 8 1.10 0.091  
 1.48 50.00 0.980

dbasina.exc

KCRTS Program...File Directory:

C:\kc\_swdm\KC\_DATA\

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 1.16 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 1.74 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 2.35 | 0.00 | 0.000000 | Wetland         |
| 1.74 | 0.00 | 0.000000 | Impervious      |

dbasina.tsf

T

1.00000

T

[X] exit KCRS Program



dbasina.pks

Flow Frequency Analysis  
 Time Series File:dbasina.tsf  
 Project Location:Sea-Tac

| ---Annual<br>Flow Rate<br>(CFS) | Peak<br>Rank | Flow Rates---<br>Time of Peak |
|---------------------------------|--------------|-------------------------------|
| 0.972                           | 3            | 2/09/01 2:00                  |
| 0.531                           | 7            | 1/05/02 16:00                 |
| 1.11                            | 2            | 2/27/03 7:00                  |
| 0.489                           | 8            | 8/26/04 2:00                  |
| 0.593                           | 6            | 10/28/04 16:00                |
| 0.690                           | 5            | 1/18/06 16:00                 |
| 0.709                           | 4            | 10/26/06 0:00                 |
| 1.50                            | 1            | 1/09/08 9:00                  |
| Computed Peaks                  |              |                               |

| -----Flow Frequency Analysis-----<br>- - Peaks - - | Rank | Return<br>Period | Prob  |
|----------------------------------------------------|------|------------------|-------|
| (CFS)                                              |      |                  |       |
| 1.50                                               | 1    | 100.00           | 0.990 |
| 1.11                                               | 2    | 25.00            | 0.960 |
| 0.972                                              | 3    | 10.00            | 0.900 |
| 0.709                                              | 4    | 5.00             | 0.800 |
| 0.690                                              | 5    | 3.00             | 0.667 |
| 0.593                                              | 6    | 2.00             | 0.500 |
| 0.531                                              | 7    | 1.30             | 0.231 |
| 0.489                                              | 8    | 1.10             | 0.091 |
| 1.37                                               |      | 50.00            | 0.980 |

dwetn.pks

Flow Frequency Analysis  
Time Series File:dwetn.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       |
|------------------------------|------|--------------|-------|
| Flow Rate<br>(CFS)           | Rank | Time of Peak |       |
| 1.64                         | 3    | 2/09/01      | 3:00  |
| 0.650                        | 7    | 1/05/02      | 16:00 |
| 1.96                         | 2    | 2/27/03      | 7:00  |
| 0.584                        | 8    | 8/26/04      | 2:00  |
| 0.893                        | 6    | 1/05/05      | 8:00  |
| 1.44                         | 5    | 1/18/06      | 16:00 |
| 1.51                         | 4    | 10/26/06     | 2:00  |
| 2.80                         | 1    | 1/09/08      | 7:00  |
| Computed Peaks               |      |              |       |

| -----Flow Frequency Analysis----- |      |                  |       |  |
|-----------------------------------|------|------------------|-------|--|
| - - Peaks - -                     | Rank | Return<br>Period | Prob  |  |
| 2.80                              | 1    | 100.00           | 0.990 |  |
| 1.96                              | 2    | 25.00            | 0.960 |  |
| 1.64                              | 3    | 10.00            | 0.900 |  |
| 1.51                              | 4    | 5.00             | 0.800 |  |
| 1.44                              | 5    | 3.00             | 0.667 |  |
| 0.893                             | 6    | 2.00             | 0.500 |  |
| 0.650                             | 7    | 1.30             | 0.231 |  |
| 0.584                             | 8    | 1.10             | 0.091 |  |
| 2.52                              |      | 50.00            | 0.980 |  |

## Retention/Detention Facility

Type of Facility: Detention Pond  
 Side Slope: 15.00 H:1V  
 Pond Bottom Length: 320.00 ft  
 Pond Bottom Width: 320.00 ft  
 Pond Bottom Area: 102400. sq. ft  
 Top Area at 1 ft. FB: 133225. sq. ft  
 3.058 acres  
 Effective Storage Depth: 0.50 ft  
 Stage 0 Elevation: 312.00 ft  
 Storage Volume: 53638. cu. ft  
 1.231 ac-ft  
 Riser Head: 0.50 ft  
 Riser Diameter: 18.00 inches  
 Top Notch Weir: Rectangular  
 Length: 15.00 in  
 Weir Height: 0.00 ft  
 Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | (ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) | Surf Area<br>(sq. ft) |
|---------------|-------------------|---------------------|---------|--------------------|----------------------|-----------------------|
| 0.00          | 312.00            | 0.                  | 0.000   | 0.000              | 0.00                 | 102400.               |
| 0.03          | 312.03            | 3081.               | 0.071   | 0.018              | 0.00                 | 102977.               |
| 0.05          | 312.05            | 5144.               | 0.118   | 0.051              | 0.00                 | 103362.               |
| 0.08          | 312.08            | 8254.               | 0.189   | 0.093              | 0.00                 | 103942.               |
| 0.10          | 312.10            | 10336.              | 0.237   | 0.143              | 0.00                 | 104329.               |
| 0.13          | 312.13            | 13475.              | 0.309   | 0.199              | 0.00                 | 104911.               |
| 0.15          | 312.15            | 15577.              | 0.358   | 0.260              | 0.00                 | 105300.               |
| 0.18          | 312.18            | 18745.              | 0.430   | 0.326              | 0.00                 | 105885.               |
| 0.20          | 312.20            | 20866.              | 0.479   | 0.397              | 0.00                 | 106276.               |
| 0.23          | 312.23            | 24063.              | 0.552   | 0.472              | 0.00                 | 106864.               |
| 0.25          | 312.25            | 26205.              | 0.602   | 0.551              | 0.00                 | 107256.               |
| 0.28          | 312.28            | 29431.              | 0.676   | 0.632              | 0.00                 | 107847.               |
| 0.30          | 312.30            | 31592.              | 0.725   | 0.718              | 0.00                 | 108241.               |
| 0.33          | 312.33            | 34848.              | 0.800   | 0.806              | 0.00                 | 108834.               |
| 0.35          | 312.35            | 37029.              | 0.850   | 0.897              | 0.00                 | 109230.               |
| 0.38          | 312.38            | 40315.              | 0.925   | 0.990              | 0.00                 | 109826.               |
| 0.40          | 312.40            | 42515.              | 0.976   | 1.090              | 0.00                 | 110224.               |
| 0.43          | 312.43            | 45831.              | 1.052   | 1.180              | 0.00                 | 110822.               |
| 0.45          | 312.45            | 48051.              | 1.103   | 1.290              | 0.00                 | 111222.               |
| 0.48          | 312.48            | 51397.              | 1.180   | 1.390              | 0.00                 | 111823.               |
| 0.50          | 312.50            | 53638.              | 1.231   | 1.490              | 0.00                 | 112225.               |
| 0.60          | 312.60            | 64961.              | 1.491   | 1.950              | 0.00                 | 114244.               |
| 0.70          | 312.70            | 76487.              | 1.756   | 2.800              | 0.00                 | 116281.               |
| 0.80          | 312.80            | 88218.              | 2.025   | 3.890              | 0.00                 | 118336.               |
| 0.90          | 312.90            | 100155.             | 2.299   | 5.190              | 0.00                 | 120409.               |
| 1.00          | 313.00            | 112300.             | 2.578   | 6.660              | 0.00                 | 122500.               |
| 1.10          | 313.10            | 124655.             | 2.862   | 8.080              | 0.00                 | 124609.               |
| 1.20          | 313.20            | 137222.             | 3.150   | 9.610              | 0.00                 | 126736.               |
| 1.30          | 313.30            | 150003.             | 3.444   | 11.100             | 0.00                 | 128881.               |
| 1.40          | 313.40            | 162999.             | 3.742   | 12.560             | 0.00                 | 131044.               |
| 1.50          | 313.50            | 176213.             | 4.045   | 14.000             | 0.00                 | 133225.               |
| 1.60          | 313.60            | 189645.             | 4.354   | 15.420             | 0.00                 | 135424.               |



|      |        |         |       |        |      |         |
|------|--------|---------|-------|--------|------|---------|
| 1.70 | 313.70 | 203298. | 4.667 | 10.810 | 0.00 | 137641. |
| 1.80 | 313.80 | 217174. | 4.986 | 11.190 | 0.00 | 139876. |
| 1.90 | 313.90 | 231274. | 5.309 | 11.560 | 0.00 | 142129. |
| 2.00 | 314.00 | 245600. | 5.638 | 11.910 | 0.00 | 144400. |
| 2.10 | 314.10 | 260154. | 5.972 | 12.260 | 0.00 | 146689. |
| 2.20 | 314.20 | 274938. | 6.312 | 12.590 | 0.00 | 148996. |
| 2.30 | 314.30 | 289954. | 6.656 | 12.910 | 0.00 | 151321. |
| 2.40 | 314.40 | 305203. | 7.007 | 13.220 | 0.00 | 153664. |
| 2.50 | 314.50 | 320688. | 7.362 | 13.530 | 0.00 | 156025. |

| Hyd | Inflow | Outflow |      | Peak  |        | Storage |         |
|-----|--------|---------|------|-------|--------|---------|---------|
|     |        | Target  | Calc | Stage | Elev   | (Cu-Ft) | (Ac-Ft) |
| 1   | 4.60   | 1.10    | 2.33 | 0.64  | 312.64 | 70132.  | 1.610   |
| 2   | 2.23   | *****   | 1.64 | 0.53  | 312.53 | 57216.  | 1.313   |
| 3   | 2.06   | *****   | 1.37 | 0.47  | 312.47 | 50667.  | 1.163   |
| 4   | 2.14   | *****   | 1.35 | 0.47  | 312.47 | 50084.  | 1.150   |
| 5   | 2.51   | *****   | 1.17 | 0.43  | 312.43 | 45479.  | 1.044   |
| 6   | 1.36   | *****   | 0.82 | 0.33  | 312.33 | 35103.  | 0.806   |
| 7   | 1.03   | *****   | 0.49 | 0.23  | 312.23 | 24434.  | 0.561   |
| 8   | 0.91   | *****   | 0.39 | 0.20  | 312.20 | 20758.  | 0.477   |

-----

Route Time Series through Facility  
 Inflow Time Series File:dwetin.tsf  
 Outflow Time Series File:dwetout

#### Inflow/Outflow Analysis

Peak Inflow Discharge: 4.60 CFS at 7:00 on Jan 9 in Year 8  
 Peak Outflow Discharge: 2.33 CFS at 10:00 on Jan 9 in Year 8  
 Peak Reservoir Stage: 0.64 Ft  
 Peak Reservoir Elev: 312.64 Ft  
 Peak Reservoir Storage: 70132. Cu-Ft  
 : 1.610 Ac-Ft

#### Flow Frequency Analysis

Time Series File:dwetout.tsf  
 Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |        |        |
|------------------------------|------|--------------|-------|-----------------------------------|------|--------|--------|
| Flow Rate                    | Rank | Time of Peak |       | - - Peaks - -                     | Rank | Return | Prob   |
| (CFS)                        |      |              |       | (CFS)                             | (ft) | Period |        |
| 1.64                         | 2    | 2/09/01      | 19:00 | 2.33                              | 0.64 | 1      | 100.00 |
| 0.486                        | 7    | 1/06/02      | 7:00  | 1.64                              | 0.53 | 2      | 25.00  |
| 1.17                         | 5    | 3/06/03      | 21:00 | 1.37                              | 0.47 | 3      | 10.00  |
| 0.393                        | 8    | 8/26/04      | 7:00  | 1.35                              | 0.47 | 4      | 5.00   |
| 0.817                        | 6    | 1/05/05      | 11:00 | 1.17                              | 0.43 | 5      | 3.00   |
| 1.35                         | 4    | 1/18/06      | 22:00 | 0.817                             | 0.33 | 6      | 2.00   |
| 1.37                         | 3    | 11/24/06     | 7:00  | 0.486                             | 0.23 | 7      | 1.30   |
| 2.33                         | 1    | 1/09/08      | 10:00 | 0.393                             | 0.20 | 8      | 1.10   |
| Computed Peaks               |      |              |       | 2.10                              | 0.62 | 50.00  | 0.980  |

#### Flow Duration from Time Series File:dwetout.tsf

| Cutoff | Count | Frequency | CDF    | Exceedence_Probability |           |
|--------|-------|-----------|--------|------------------------|-----------|
| CFS    |       | %         | %      | %                      |           |
| 0.023  | 42303 | 68.987    | 68.987 | 31.013                 | 0.310E+00 |
| 0.069  | 8363  | 13.638    | 82.626 | 17.374                 | 0.174E+00 |
| 0.115  | 4629  | 7.549     | 90.174 | 9.826                  | 0.983E-01 |

|       |      |       |        |       |           |
|-------|------|-------|--------|-------|-----------|
| 0.161 | 2344 | 3.823 | 93.997 | 6.003 | 0.600E-01 |
| 0.206 | 1441 | 2.350 | 96.347 | 3.653 | 0.365E-01 |
| 0.252 | 671  | 1.094 | 97.441 | 2.559 | 0.256E-01 |
| 0.298 | 472  | 0.770 | 98.211 | 1.789 | 0.179E-01 |
| 0.344 | 286  | 0.466 | 98.677 | 1.323 | 0.132E-01 |
| 0.389 | 166  | 0.271 | 98.948 | 1.052 | 0.105E-01 |
| 0.435 | 178  | 0.290 | 99.238 | 0.762 | 0.762E-02 |
| 0.481 | 96   | 0.157 | 99.395 | 0.605 | 0.605E-02 |
| 0.527 | 45   | 0.073 | 99.468 | 0.532 | 0.532E-02 |
| 0.572 | 32   | 0.052 | 99.521 | 0.479 | 0.479E-02 |
| 0.618 | 56   | 0.091 | 99.612 | 0.388 | 0.388E-02 |
| 0.664 | 31   | 0.051 | 99.662 | 0.338 | 0.338E-02 |
| 0.710 | 24   | 0.039 | 99.702 | 0.298 | 0.298E-02 |
| 0.756 | 30   | 0.049 | 99.750 | 0.250 | 0.250E-02 |
| 0.801 | 25   | 0.041 | 99.791 | 0.209 | 0.209E-02 |
| 0.847 | 19   | 0.031 | 99.822 | 0.178 | 0.178E-02 |
| 0.893 | 6    | 0.010 | 99.832 | 0.168 | 0.168E-02 |
| 0.939 | 15   | 0.024 | 99.856 | 0.144 | 0.144E-02 |
| 0.984 | 16   | 0.026 | 99.883 | 0.117 | 0.117E-02 |
| 1.03  | 10   | 0.016 | 99.899 | 0.101 | 0.101E-02 |
| 1.08  | 8    | 0.013 | 99.912 | 0.088 | 0.881E-03 |
| 1.12  | 10   | 0.016 | 99.928 | 0.072 | 0.718E-03 |
| 1.17  | 4    | 0.007 | 99.935 | 0.065 | 0.652E-03 |
| 1.21  | 7    | 0.011 | 99.946 | 0.054 | 0.538E-03 |
| 1.26  | 3    | 0.005 | 99.951 | 0.049 | 0.489E-03 |
| 1.30  | 4    | 0.007 | 99.958 | 0.042 | 0.424E-03 |
| 1.35  | 6    | 0.010 | 99.967 | 0.033 | 0.326E-03 |
| 1.40  | 7    | 0.011 | 99.979 | 0.021 | 0.212E-03 |
| 1.44  | 3    | 0.005 | 99.984 | 0.016 | 0.163E-03 |
| 1.49  | 2    | 0.003 | 99.987 | 0.013 | 0.130E-03 |
| 1.53  | 2    | 0.003 | 99.990 | 0.010 | 0.978E-04 |
| 1.58  | 1    | 0.002 | 99.992 | 0.008 | 0.815E-04 |
| 1.63  | 4    | 0.007 | 99.998 | 0.002 | 0.163E-04 |

Discharge Volume

Discharge Volume from Time Series

dwetout.tsf

between 10/01/00 00:00 and 10/30/00 23:59

189066. Cu-Ft or 4.340 Ac-Ft in 30.0 days

dwetout.pks

Flow Frequency Analysis  
Time Series File:dwetout.tsf  
Project Location:Sea-Tac

---Annual Peak Flow Rates---  
Flow Rate Rank Time of Peak  
(CFS)  
1.64 2 2/09/01 19:00  
0.486 7 1/06/02 7:00  
1.17 5 3/06/03 21:00  
0.393 8 8/26/04 7:00  
0.817 6 1/05/05 11:00  
1.35 4 1/18/06 22:00  
1.37 3 11/24/06 7:00  
2.33 1 1/09/08 10:00  
Computed Peaks

-----Flow Frequency Analysis-----  
- - Peaks - - Rank Return Prob  
(CFS) (ft) Period  
2.33 0.64 1 100.00 0.990  
1.64 0.53 2 25.00 0.960  
1.37 0.47 3 10.00 0.900  
1.35 0.47 4 5.00 0.800  
1.17 0.43 5 3.00 0.667  
0.817 0.33 6 2.00 0.500  
0.486 0.23 7 1.30 0.231  
0.393 0.20 8 1.10 0.091  
2.10 0.62 50.00 0.980



dbasinb.exc

KCRTS Program...File Directory:  
C:\kc\_swdm\KC\_DATA\

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 1.32 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 4.52 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 0.00 | 0.00 | 0.000000 | Wetland         |
| 3.10 | 0.00 | 0.000000 | Impervious      |

dbasinb.tsf

T

1.00000

T

[X] exit KCRS Program

dbasinb.pks

Flow Frequency Analysis  
Time Series File:dbasinb.tsf  
Project Location:Sea-Tac

---Annual Peak Flow Rates---  
Flow Rate Rank Time of Peak  
(CFS)  
1.21 5 2/09/01 2:00  
0.890 7 1/05/02 16:00  
1.46 2 2/27/03 7:00  
0.857 8 8/26/04 2:00  
1.05 6 10/28/04 16:00  
1.27 3 1/18/06 16:00  
1.24 4 10/26/06 0:00  
2.51 1 1/09/08 6:00  
Computed Peaks

-----Flow Frequency Analysis-----  
- - Peaks - - Rank Return Prob  
(CFS) Period  
2.51 1 100.00 0.990  
1.46 2 25.00 0.960  
1.27 3 10.00 0.900  
1.24 4 5.00 0.800  
1.21 5 3.00 0.667  
1.05 6 2.00 0.500  
0.890 7 1.30 0.231  
0.857 8 1.10 0.091  
2.16 50.00 0.980

## Retention/Detention Facility

Type of Facility: Detention Vault  
 Facility Length: 70.00 ft  
 Facility Width: 60.00 ft  
 Facility Area: 4200. sq. ft  
 Effective Storage Depth: 10.30 ft  
 Stage 0 Elevation: 300.12 ft  
 Storage Volume: 43260. cu. ft  
 Riser Head: 10.30 ft  
 Riser Diameter: 15.00 inches  
 Number of orifices: 2

| Orifice # | Height<br>(ft) | Diameter<br>(in) | Full Head<br>Discharge<br>(CFS) | Pipe<br>Diameter<br>(in) |
|-----------|----------------|------------------|---------------------------------|--------------------------|
| 1         | 0.00           | 1.50             | 0.196                           |                          |
| 2         | 7.50           | 2.20             | 0.220                           | 6.0                      |

Top Notch Weir: Rectangular

Length: 1.20 in

Weir Height: 8.50 ft

Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | (ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) |
|---------------|-------------------|---------------------|---------|--------------------|----------------------|
| 0.00          | 300.12            | 0.                  | 0.000   | 0.000              | 0.00                 |
| 0.02          | 300.14            | 84.                 | 0.002   | 0.008              | 0.00                 |
| 0.03          | 300.15            | 126.                | 0.003   | 0.011              | 0.00                 |
| 0.05          | 300.17            | 210.                | 0.005   | 0.013              | 0.00                 |
| 0.06          | 300.18            | 252.                | 0.006   | 0.015              | 0.00                 |
| 0.08          | 300.20            | 336.                | 0.008   | 0.017              | 0.00                 |
| 0.09          | 300.21            | 378.                | 0.009   | 0.019              | 0.00                 |
| 0.11          | 300.23            | 462.                | 0.011   | 0.020              | 0.00                 |
| 0.13          | 300.25            | 546.                | 0.013   | 0.022              | 0.00                 |
| 0.33          | 300.45            | 1386.               | 0.032   | 0.035              | 0.00                 |
| 0.53          | 300.65            | 2226.               | 0.051   | 0.044              | 0.00                 |
| 0.73          | 300.85            | 3066.               | 0.070   | 0.052              | 0.00                 |
| 0.93          | 301.05            | 3906.               | 0.090   | 0.059              | 0.00                 |
| 1.13          | 301.25            | 4746.               | 0.109   | 0.065              | 0.00                 |
| 1.34          | 301.46            | 5628.               | 0.129   | 0.071              | 0.00                 |
| 1.54          | 301.66            | 6468.               | 0.148   | 0.076              | 0.00                 |
| 1.74          | 301.86            | 7308.               | 0.168   | 0.081              | 0.00                 |
| 1.94          | 302.06            | 8148.               | 0.187   | 0.085              | 0.00                 |
| 2.14          | 302.26            | 8988.               | 0.206   | 0.089              | 0.00                 |
| 2.35          | 302.47            | 9870.               | 0.227   | 0.093              | 0.00                 |
| 2.55          | 302.67            | 10710.              | 0.246   | 0.097              | 0.00                 |
| 2.75          | 302.87            | 11550.              | 0.265   | 0.101              | 0.00                 |
| 2.95          | 303.07            | 12390.              | 0.284   | 0.105              | 0.00                 |
| 3.15          | 303.27            | 13230.              | 0.304   | 0.108              | 0.00                 |
| 3.36          | 303.48            | 14112.              | 0.324   | 0.112              | 0.00                 |
| 3.56          | 303.68            | 14952.              | 0.343   | 0.115              | 0.00                 |
| 3.76          | 303.88            | 15792.              | 0.363   | 0.118              | 0.00                 |
| 3.96          | 304.08            | 16632.              | 0.382   | 0.121              | 0.00                 |
| 4.16          | 304.28            | 17472.              | 0.401   | 0.125              | 0.00                 |
| 4.37          | 304.49            | 18354.              | 0.421   | 0.128              | 0.00                 |



|       |        |        |       |       |      |
|-------|--------|--------|-------|-------|------|
| 4.57  | 304.69 | 19194. | 0.441 | 0.130 | 0.00 |
| 4.77  | 304.89 | 20034. | 0.460 | 0.133 | 0.00 |
| 4.97  | 305.09 | 20874. | 0.479 | 0.136 | 0.00 |
| 5.17  | 305.29 | 21714. | 0.498 | 0.139 | 0.00 |
| 5.38  | 305.50 | 22596. | 0.519 | 0.142 | 0.00 |
| 5.58  | 305.70 | 23436. | 0.538 | 0.144 | 0.00 |
| 5.78  | 305.90 | 24276. | 0.557 | 0.147 | 0.00 |
| 5.98  | 306.10 | 25116. | 0.577 | 0.149 | 0.00 |
| 6.18  | 306.30 | 25956. | 0.596 | 0.152 | 0.00 |
| 6.39  | 306.51 | 26838. | 0.616 | 0.154 | 0.00 |
| 6.59  | 306.71 | 27678. | 0.635 | 0.157 | 0.00 |
| 6.79  | 306.91 | 28518. | 0.655 | 0.159 | 0.00 |
| 6.99  | 307.11 | 29358. | 0.674 | 0.161 | 0.00 |
| 7.19  | 307.31 | 30198. | 0.693 | 0.164 | 0.00 |
| 7.40  | 307.52 | 31080. | 0.713 | 0.166 | 0.00 |
| 7.50  | 307.62 | 31500. | 0.723 | 0.167 | 0.00 |
| 7.52  | 307.64 | 31584. | 0.725 | 0.169 | 0.00 |
| 7.55  | 307.67 | 31710. | 0.728 | 0.173 | 0.00 |
| 7.57  | 307.69 | 31794. | 0.730 | 0.179 | 0.00 |
| 7.59  | 307.71 | 31878. | 0.732 | 0.188 | 0.00 |
| 7.61  | 307.73 | 31962. | 0.734 | 0.199 | 0.00 |
| 7.64  | 307.76 | 32088. | 0.737 | 0.212 | 0.00 |
| 7.66  | 307.78 | 32172. | 0.739 | 0.221 | 0.00 |
| 7.68  | 307.80 | 32256. | 0.740 | 0.225 | 0.00 |
| 7.89  | 308.01 | 33138. | 0.761 | 0.253 | 0.00 |
| 8.09  | 308.21 | 33978. | 0.780 | 0.274 | 0.00 |
| 8.29  | 308.41 | 34818. | 0.799 | 0.292 | 0.00 |
| 8.49  | 308.61 | 35658. | 0.819 | 0.309 | 0.00 |
| 8.50  | 308.62 | 35700. | 0.820 | 0.309 | 0.00 |
| 8.70  | 308.82 | 36540. | 0.839 | 0.342 | 0.00 |
| 8.90  | 309.02 | 37380. | 0.858 | 0.388 | 0.00 |
| 9.11  | 309.23 | 38262. | 0.878 | 0.444 | 0.00 |
| 9.31  | 309.43 | 39102. | 0.898 | 0.507 | 0.00 |
| 9.51  | 309.63 | 39942. | 0.917 | 0.576 | 0.00 |
| 9.71  | 309.83 | 40782. | 0.936 | 0.652 | 0.00 |
| 9.91  | 310.03 | 41622. | 0.956 | 0.733 | 0.00 |
| 10.12 | 310.24 | 42504. | 0.976 | 0.819 | 0.00 |
| 10.30 | 310.42 | 43260. | 0.993 | 0.902 | 0.00 |
| 10.40 | 310.52 | 43680. | 1.003 | 1.290 | 0.00 |
| 10.50 | 310.62 | 44100. | 1.012 | 2.000 | 0.00 |
| 10.60 | 310.72 | 44520. | 1.022 | 2.920 | 0.00 |
| 10.70 | 310.82 | 44940. | 1.032 | 4.000 | 0.00 |
| 10.80 | 310.92 | 45360. | 1.041 | 5.100 | 0.00 |
| 10.90 | 311.02 | 45780. | 1.051 | 5.510 | 0.00 |
| 11.00 | 311.12 | 46200. | 1.061 | 5.880 | 0.00 |
| 11.10 | 311.22 | 46620. | 1.070 | 6.220 | 0.00 |
| 11.20 | 311.32 | 47040. | 1.080 | 6.550 | 0.00 |
| 11.30 | 311.42 | 47460. | 1.090 | 6.860 | 0.00 |
| 11.40 | 311.52 | 47880. | 1.099 | 7.150 | 0.00 |
| 11.50 | 311.62 | 48300. | 1.109 | 7.430 | 0.00 |
| 11.60 | 311.72 | 48720. | 1.118 | 7.700 | 0.00 |
| 11.70 | 311.82 | 49140. | 1.128 | 7.960 | 0.00 |
| 11.80 | 311.92 | 49560. | 1.138 | 8.210 | 0.00 |
| 11.90 | 312.02 | 49980. | 1.147 | 8.450 | 0.00 |
| 12.00 | 312.12 | 50400. | 1.157 | 8.680 | 0.00 |
| 12.10 | 312.22 | 50820. | 1.167 | 8.910 | 0.00 |
| 12.20 | 312.32 | 51240. | 1.176 | 9.130 | 0.00 |

| Hyd | Inflow | Outflow | Peak  |        | Storage |         |
|-----|--------|---------|-------|--------|---------|---------|
|     |        |         | Stage | Elev   | (Cu-Ft) | (Ac-Ft) |
| 1   | 2.51   | 2.37    | 10.54 | 310.66 | 44270.  | 1.016   |
| 2   | 1.21   | 0.87    | 10.24 | 310.36 | 43006.  | 0.987   |
| 3   | 1.19   | 0.78    | 10.04 | 310.16 | 42148.  | 0.968   |
| 4   | 1.27   | 0.63    | 9.66  | 309.78 | 40561.  | 0.931   |
| 5   | 1.46   | 0.63    | 9.66  | 309.78 | 40583.  | 0.932   |
| 6   | 0.74   | 0.25    | 7.86  | 307.98 | 32996.  | 0.757   |
| 7   | 0.89   | 0.15    | 5.86  | 305.98 | 24592.  | 0.565   |
| 8   | 0.86   | 0.11    | 3.20  | 303.32 | 13429.  | 0.308   |

| Hyd | R/D Facility | Tributary | Reservoir | POC Outflow |      |
|-----|--------------|-----------|-----------|-------------|------|
|     |              |           |           | Target      | Calc |
| 1   | 2.37         | 2.33      | *****     | *****       | 4.01 |
| 2   | 0.87         | 1.64      | *****     | 1.48        | 2.49 |
| 3   | 0.78         | 1.37      | *****     | *****       | 2.14 |
| 4   | 0.63         | 1.35      | *****     | *****       | 1.99 |
| 5   | 0.63         | 1.17      | *****     | *****       | 1.71 |
| 6   | 0.25         | 0.82      | *****     | *****       | 1.03 |
| 7   | 0.15         | 0.49      | *****     | *****       | 0.62 |
| 8   | 0.11         | 0.39      | *****     | *****       | 0.50 |

-----  
Route Time Series through Facility  
Inflow Time Series File:dbasinb.tsf  
Outflow Time Series File:vaultout  
POC Time Series File:d-poc

#### Inflow/Outflow Analysis

Peak Inflow Discharge: 2.52 CFS at 6:00 on Jan 9 in Year 8  
Peak Outflow Discharge: 2.37 CFS at 7:00 on Jan 9 in Year 8  
Peak Reservoir Stage: 10.54 Ft  
Peak Reservoir Elev: 310.66 Ft  
Peak Reservoir Storage: 44270. Cu-Ft  
: 1.016 Ac-Ft

Add Time Series:dwetout.tsf

Peak Summed Discharge: 4.01 CFS at 9:00 on Jan 9 in Year 8  
Point of Compliance File:d-poc.tsf  
Flow Frequency Analysis  
Time Series File:vaultout.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |                | -----Flow Frequency Analysis----- |              |                  |              |  |
|------------------------------|------|----------------|-----------------------------------|--------------|------------------|--------------|--|
| Flow Rate<br>(CFS)           | Rank | Time of Peak   | - - Peaks - -<br>(CFS)            | Rank<br>(ft) | Return<br>Period | Prob         |  |
| 0.874                        | 2    | 2/09/01 16:00  | 2.37                              | 10.54        | 1                | 100.00 0.990 |  |
| 0.148                        | 7    | 12/28/01 19:00 | 0.874                             | 10.24        | 2                | 25.00 0.960  |  |
| 0.634                        | 4    | 2/28/03 6:00   | 0.784                             | 10.04        | 3                | 10.00 0.900  |  |
| 0.109                        | 8    | 8/26/04 6:00   | 0.634                             | 9.66         | 4                | 5.00 0.800   |  |
| 0.248                        | 6    | 1/05/05 16:00  | 0.632                             | 9.66         | 5                | 3.00 0.667   |  |
| 0.632                        | 5    | 1/18/06 22:00  | 0.248                             | 7.86         | 6                | 2.00 0.500   |  |
| 0.784                        | 3    | 11/24/06 6:00  | 0.148                             | 5.86         | 7                | 1.30 0.231   |  |
| 2.37                         | 1    | 1/09/08 7:00   | 0.109                             | 3.20         | 8                | 1.10 0.091   |  |
| Computed Peaks               |      |                | 1.87                              | 10.48        |                  | 50.00 0.980  |  |

Flow Frequency Analysis

Time Series File:d-poc.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |                  |       |
|------------------------------|------|--------------|-------|-----------------------------------|------|------------------|-------|
| Flow Rate<br>(CFS)           | Rank | Time of Peak |       | - - Peaks - -<br>(CFS)            | Rank | Return<br>Period | Prob  |
| 2.49                         | 2    | 2/09/01      | 19:00 | 4.01                              | 1    | 100.00           | 0.990 |
| 0.615                        | 7    | 1/06/02      | 7:00  | 2.49                              | 2    | 25.00            | 0.960 |
| 1.71                         | 5    | 2/28/03      | 7:00  | 2.14                              | 3    | 10.00            | 0.900 |
| 0.502                        | 8    | 8/26/04      | 7:00  | 1.98                              | 4    | 5.00             | 0.800 |
| 1.03                         | 6    | 1/05/05      | 14:00 | 1.71                              | 5    | 3.00             | 0.667 |
| 1.98                         | 4    | 1/18/06      | 22:00 | 1.03                              | 6    | 2.00             | 0.500 |
| 2.14                         | 3    | 11/24/06     | 6:00  | 0.615                             | 7    | 1.30             | 0.231 |
| 4.01                         | 1    | 1/09/08      | 9:00  | 0.502                             | 8    | 1.10             | 0.091 |
| Computed Peaks               |      |              |       | 3.50                              |      | 50.00            | 0.980 |

Flow Duration from Time Series File:vaultout.tsf

| Cutoff<br>CFS | Count | Frequency<br>% | CDF<br>% | Exceedence<br>% | Probability |
|---------------|-------|----------------|----------|-----------------|-------------|
| 0.012         | 41486 | 67.655         | 67.655   | 32.345          | 0.323E+00   |
| 0.037         | 7246  | 11.817         | 79.472   | 20.528          | 0.205E+00   |
| 0.062         | 5185  | 8.456          | 87.927   | 12.073          | 0.121E+00   |
| 0.086         | 3443  | 5.615          | 93.542   | 6.458           | 0.646E-01   |
| 0.111         | 1773  | 2.891          | 96.433   | 3.567           | 0.357E-01   |
| 0.135         | 1089  | 1.776          | 98.209   | 1.791           | 0.179E-01   |
| 0.160         | 554   | 0.903          | 99.113   | 0.887           | 0.887E-02   |
| 0.185         | 289   | 0.471          | 99.584   | 0.416           | 0.416E-02   |
| 0.209         | 21    | 0.034          | 99.618   | 0.382           | 0.382E-02   |
| 0.234         | 32    | 0.052          | 99.671   | 0.329           | 0.329E-02   |
| 0.258         | 37    | 0.060          | 99.731   | 0.269           | 0.269E-02   |
| 0.283         | 27    | 0.044          | 99.775   | 0.225           | 0.225E-02   |
| 0.307         | 23    | 0.038          | 99.812   | 0.188           | 0.188E-02   |
| 0.332         | 20    | 0.033          | 99.845   | 0.155           | 0.155E-02   |
| 0.357         | 14    | 0.023          | 99.868   | 0.132           | 0.132E-02   |
| 0.381         | 12    | 0.020          | 99.887   | 0.113           | 0.113E-02   |
| 0.406         | 7     | 0.011          | 99.899   | 0.101           | 0.101E-02   |
| 0.430         | 10    | 0.016          | 99.915   | 0.085           | 0.848E-03   |
| 0.455         | 6     | 0.010          | 99.925   | 0.075           | 0.750E-03   |
| 0.480         | 1     | 0.002          | 99.927   | 0.073           | 0.734E-03   |
| 0.504         | 8     | 0.013          | 99.940   | 0.060           | 0.603E-03   |
| 0.529         | 2     | 0.003          | 99.943   | 0.057           | 0.571E-03   |
| 0.553         | 5     | 0.008          | 99.951   | 0.049           | 0.489E-03   |
| 0.578         | 1     | 0.002          | 99.953   | 0.047           | 0.473E-03   |
| 0.603         | 4     | 0.007          | 99.959   | 0.041           | 0.408E-03   |
| 0.627         | 3     | 0.005          | 99.964   | 0.036           | 0.359E-03   |
| 0.652         | 6     | 0.010          | 99.974   | 0.026           | 0.261E-03   |
| 0.676         | 1     | 0.002          | 99.976   | 0.024           | 0.245E-03   |
| 0.701         | 2     | 0.003          | 99.979   | 0.021           | 0.212E-03   |
| 0.725         | 3     | 0.005          | 99.984   | 0.016           | 0.163E-03   |
| 0.750         | 1     | 0.002          | 99.985   | 0.015           | 0.147E-03   |
| 0.775         | 2     | 0.003          | 99.989   | 0.011           | 0.114E-03   |
| 0.799         | 1     | 0.002          | 99.990   | 0.010           | 0.978E-04   |
| 0.824         | 2     | 0.003          | 99.993   | 0.007           | 0.652E-04   |
| 0.848         | 2     | 0.003          | 99.997   | 0.003           | 0.326E-04   |
| 0.873         | 1     | 0.002          | 99.998   | 0.002           | 0.163E-04   |

Flow Duration from Time Series File:d-poc.tsf



| Cutoff | Count | Frequency | CDF    | Exceedence_Probability |           |
|--------|-------|-----------|--------|------------------------|-----------|
| CFS    |       | %         | %      | %                      |           |
| 0.035  | 41933 | 68.384    | 68.384 | 31.616                 | 0.316E+00 |
| 0.105  | 7745  | 12.630    | 81.014 | 18.986                 | 0.190E+00 |
| 0.175  | 5046  | 8.229     | 89.243 | 10.757                 | 0.108E+00 |
| 0.245  | 2784  | 4.540     | 93.783 | 6.217                  | 0.622E-01 |
| 0.314  | 1574  | 2.567     | 96.350 | 3.650                  | 0.365E-01 |
| 0.384  | 864   | 1.409     | 97.759 | 2.241                  | 0.224E-01 |
| 0.454  | 451   | 0.735     | 98.495 | 1.505                  | 0.151E-01 |
| 0.524  | 291   | 0.475     | 98.969 | 1.031                  | 0.103E-01 |
| 0.593  | 185   | 0.302     | 99.271 | 0.729                  | 0.729E-02 |
| 0.663  | 84    | 0.137     | 99.408 | 0.592                  | 0.592E-02 |
| 0.733  | 71    | 0.116     | 99.524 | 0.476                  | 0.476E-02 |
| 0.803  | 42    | 0.068     | 99.592 | 0.408                  | 0.408E-02 |
| 0.872  | 36    | 0.059     | 99.651 | 0.349                  | 0.349E-02 |
| 0.942  | 40    | 0.065     | 99.716 | 0.284                  | 0.284E-02 |
| 1.01   | 28    | 0.046     | 99.762 | 0.238                  | 0.238E-02 |
| 1.08   | 23    | 0.038     | 99.799 | 0.201                  | 0.201E-02 |
| 1.15   | 21    | 0.034     | 99.834 | 0.166                  | 0.166E-02 |
| 1.22   | 17    | 0.028     | 99.861 | 0.139                  | 0.139E-02 |
| 1.29   | 12    | 0.020     | 99.881 | 0.119                  | 0.119E-02 |
| 1.36   | 8     | 0.013     | 99.894 | 0.106                  | 0.106E-02 |
| 1.43   | 5     | 0.008     | 99.902 | 0.098                  | 0.978E-03 |
| 1.50   | 7     | 0.011     | 99.914 | 0.086                  | 0.864E-03 |
| 1.57   | 7     | 0.011     | 99.925 | 0.075                  | 0.750E-03 |
| 1.64   | 6     | 0.010     | 99.935 | 0.065                  | 0.652E-03 |
| 1.71   | 7     | 0.011     | 99.946 | 0.054                  | 0.538E-03 |
| 1.78   | 2     | 0.003     | 99.949 | 0.051                  | 0.506E-03 |
| 1.85   | 4     | 0.007     | 99.956 | 0.044                  | 0.440E-03 |
| 1.92   | 4     | 0.007     | 99.962 | 0.038                  | 0.375E-03 |
| 1.99   | 3     | 0.005     | 99.967 | 0.033                  | 0.326E-03 |
| 2.06   | 5     | 0.008     | 99.976 | 0.024                  | 0.245E-03 |
| 2.13   | 3     | 0.005     | 99.980 | 0.020                  | 0.196E-03 |
| 2.20   | 5     | 0.008     | 99.989 | 0.011                  | 0.114E-03 |
| 2.27   | 0     | 0.000     | 99.989 | 0.011                  | 0.114E-03 |
| 2.34   | 1     | 0.002     | 99.990 | 0.010                  | 0.978E-04 |
| 2.41   | 1     | 0.002     | 99.992 | 0.008                  | 0.815E-04 |
| 2.48   | 4     | 0.007     | 99.998 | 0.002                  | 0.163E-04 |

d-poc.pks

Flow Frequency Analysis  
Time Series File:d-poc.tsf  
Project Location:Sea-Tac

| ---Annual<br>Flow Rate<br>(CFS) | Peak<br>Rank | Flow Rates---<br>Time of Peak |
|---------------------------------|--------------|-------------------------------|
| 2.49                            | 2            | 2/09/01 19:00                 |
| 0.615                           | 7            | 1/06/02 7:00                  |
| 1.71                            | 5            | 2/28/03 7:00                  |
| 0.502                           | 8            | 8/26/04 7:00                  |
| 1.03                            | 6            | 1/05/05 14:00                 |
| 1.98                            | 4            | 1/18/06 22:00                 |
| 2.14                            | 3            | 11/24/06 6:00                 |
| 4.01                            | 1            | 1/09/08 9:00                  |
| Computed Peaks                  |              |                               |

| -----Flow Frequency Analysis----- |      |                  |       |
|-----------------------------------|------|------------------|-------|
| - - Peaks - -<br>(CFS)            | Rank | Return<br>Period | Prob  |
| 4.01                              | 1    | 100.00           | 0.990 |
| 2.49                              | 2    | 25.00            | 0.960 |
| 2.14                              | 3    | 10.00            | 0.900 |
| 1.98                              | 4    | 5.00             | 0.800 |
| 1.71                              | 5    | 3.00             | 0.667 |
| 1.03                              | 6    | 2.00             | 0.500 |
| 0.615                             | 7    | 1.30             | 0.231 |
| 0.502                             | 8    | 1.10             | 0.091 |
| 3.50                              |      | 50.00            | 0.980 |

sr99.exc

KCRTS Program...File Directory:

C:\kc\_swdm\KC\_DATA\

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 0.00 | 0.00 | 0.000000 | Till Forest     |
| 0.52 | 0.00 | 0.000000 | Till Pasture    |
| 0.00 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 0.00 | 0.00 | 0.000000 | Wetland         |
| 2.85 | 0.00 | 0.000000 | Impervious      |

sr99dev.tsf

T

1.00000

T

[F] Size a Retention/Detention FACILITY

Manual Design

sr99vaulta.rdf

5 Route Time Series

0 Return to Main Menu

[F] Size a Retention/Detention FACILITY

Manual Design

sr99vaulta.rdf

5 Route Time Series

0 Return to Main Menu

[X] exit KCRS Program



sr99dev.pks

Flow Frequency Analysis  
 Time Series File: sr99dev.tsf  
 Project Location: Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.718 6 2/09/01 2:00  
 0.621 8 1/05/02 16:00  
 0.865 3 12/08/02 18:00  
 0.711 7 8/26/04 2:00  
 0.845 4 10/28/04 16:00  
 0.769 5 1/18/06 16:00  
 1.03 2 10/26/06 0:00  
 1.41 1 1/09/08 6:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) Period  
 1.41 1 100.00 0.990  
 1.03 2 25.00 0.960  
 0.865 3 10.00 0.900  
 0.845 4 5.00 0.800  
 0.769 5 3.00 0.667  
 0.718 6 2.00 0.500  
 0.711 7 1.30 0.231  
 0.621 8 1.10 0.091  
 1.28 50.00 0.980

SR 99 VAWLT

|                         |          |
|-------------------------|----------|
| Orifice diameter (in) = | 1.32     |
| Orifice area (sf) =     | 0.009499 |
| Weir Invert (ft) =      | 1.25     |
| Weir length (ft) =      | 0.021    |

| stage | Q-Total | volume | area | Q-orifice | Q-notch | Q-overflow |
|-------|---------|--------|------|-----------|---------|------------|
| 0.00  | 0.000   | 0      | 2958 | 0.000     |         |            |
| 0.05  | 0.011   | 148    | 2958 | 0.011     |         |            |
| 0.10  | 0.015   | 296    | 2958 | 0.015     |         |            |
| 0.15  | 0.018   | 444    | 2958 | 0.018     |         |            |
| 0.20  | 0.021   | 592    | 2958 | 0.021     |         |            |
| 0.25  | 0.024   | 740    | 2958 | 0.024     |         |            |
| 0.30  | 0.026   | 887    | 2958 | 0.026     |         |            |
| 0.35  | 0.028   | 1035   | 2958 | 0.028     |         |            |
| 0.40  | 0.030   | 1183   | 2958 | 0.030     |         |            |
| 0.45  | 0.032   | 1331   | 2958 | 0.032     |         |            |
| 0.50  | 0.033   | 1479   | 2958 | 0.033     |         |            |
| 0.55  | 0.035   | 1627   | 2958 | 0.035     |         |            |
| 0.60  | 0.037   | 1775   | 2958 | 0.037     |         |            |
| 0.65  | 0.038   | 1923   | 2958 | 0.038     |         |            |
| 0.70  | 0.040   | 2071   | 2958 | 0.040     |         |            |
| 0.75  | 0.041   | 2219   | 2958 | 0.041     |         |            |
| 0.80  | 0.042   | 2366   | 2958 | 0.042     |         |            |
| 0.85  | 0.044   | 2514   | 2958 | 0.044     |         |            |
| 0.90  | 0.045   | 2662   | 2958 | 0.045     |         |            |
| 0.95  | 0.046   | 2810   | 2958 | 0.046     |         |            |
| 1.00  | 0.047   | 2958   | 2958 | 0.047     |         |            |
| 1.05  | 0.048   | 3106   | 2958 | 0.048     |         |            |
| 1.10  | 0.050   | 3254   | 2958 | 0.050     |         |            |
| 1.15  | 0.051   | 3402   | 2958 | 0.051     |         |            |
| 1.20  | 0.052   | 3550   | 2958 | 0.052     |         |            |
| 1.25  | 0.053   | 3698   | 2958 | 0.053     | 0.000   |            |
| 1.30  | 0.055   | 3845   | 2958 | 0.054     | 0.001   |            |
| 1.35  | 0.057   | 3993   | 2958 | 0.055     | 0.002   |            |
| 1.40  | 0.060   | 4141   | 2958 | 0.056     | 0.004   |            |
| 1.45  | 0.063   | 4289   | 2958 | 0.057     | 0.006   |            |
| 1.50  | 0.067   | 4437   | 2958 | 0.058     | 0.009   |            |
| 1.55  | 0.070   | 4585   | 2958 | 0.059     | 0.012   |            |
| 1.60  | 0.074   | 4733   | 2958 | 0.060     | 0.015   |            |
| 1.65  | 0.079   | 4881   | 2958 | 0.061     | 0.018   |            |
| 1.70  | 0.083   | 5029   | 2958 | 0.062     | 0.021   |            |
| 1.75  | 0.088   | 5177   | 2958 | 0.063     | 0.025   |            |
| 1.80  | 0.093   | 5324   | 2958 | 0.063     | 0.029   |            |
| 1.85  | 0.098   | 5472   | 2958 | 0.064     | 0.034   |            |
| 1.90  | 0.103   | 5620   | 2958 | 0.065     | 0.038   |            |
| 1.95  | 0.109   | 5768   | 2958 | 0.066     | 0.043   |            |
| 2.00  | 0.114   | 5916   | 2958 | 0.067     | 0.047   |            |
| 2.05  | 0.120   | 6064   | 2958 | 0.068     | 0.053   |            |
| 2.10  | 0.126   | 6212   | 2958 | 0.068     | 0.058   |            |
| 2.15  | 0.133   | 6360   | 2958 | 0.069     | 0.063   |            |
| 2.20  | 0.139   | 6508   | 2958 | 0.070     | 0.069   |            |
| 2.25  | 0.146   | 6656   | 2958 | 0.071     | 0.075   |            |
| 2.30  | 0.153   | 6803   | 2958 | 0.072     | 0.081   |            |
| 2.35  | 0.160   | 6951   | 2958 | 0.072     | 0.087   |            |
| 2.40  | 0.167   | 7099   | 2958 | 0.073     | 0.093   |            |
| 2.45  | 0.174   | 7247   | 2958 | 0.074     | 0.100   |            |
| 2.50  | 0.182   | 7395   | 2958 | 0.075     | 0.107   |            |
| 2.55  | 0.189   | 7543   | 2958 | 0.075     | 0.114   |            |
| 2.60  | 0.197   | 7691   | 2958 | 0.076     | 0.121   |            |
| 2.65  | 0.205   | 7839   | 2958 | 0.077     | 0.128   |            |
| 2.70  | 0.213   | 7987   | 2958 | 0.078     | 0.136   |            |
| 2.75  | 0.222   | 8134   | 2958 | 0.078     | 0.144   |            |
| 2.80  | 0.230   | 8282   | 2958 | 0.079     | 0.151   |            |
| 2.85  | 0.239   | 8430   | 2958 | 0.080     | 0.159   |            |
| 2.90  | 0.248   | 8578   | 2958 | 0.080     | 0.168   |            |
| 2.95  | 0.257   | 8726   | 2958 | 0.081     | 0.176   |            |
| 3.00  | 0.267   | 8874   | 2958 | 0.082     | 0.185   |            |
| 3.05  | 2.169   | 9022   | 2958 | 0.083     | 0.185   | 1.902      |
| 3.10  | 2.957   | 9170   | 2958 | 0.083     | 0.185   | 2.690      |
| 3.15  | 3.563   | 9318   | 2958 | 0.084     | 0.185   | 3.294      |
| 3.20  | 4.073   | 9466   | 2958 | 0.085     | 0.185   | 3.804      |
| 3.25  | 4.522   | 9613   | 2958 | 0.085     | 0.185   | 4.252      |
| 3.30  | 4.929   | 9761   | 2958 | 0.086     | 0.185   | 4.658      |
| 3.35  | 5.303   | 9909   | 2958 | 0.086     | 0.185   | 5.032      |
| 3.40  | 5.651   | 10057  | 2958 | 0.087     | 0.185   | 5.379      |
| 3.45  | 5.978   | 10205  | 2958 | 0.088     | 0.185   | 5.705      |
| 3.50  | 6.287   | 10353  | 2958 | 0.088     | 0.185   | 6.014      |

va-out.pks

Flow Frequency Analysis  
 Time Series File:va-out.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.707 5 2/09/01 3:00  
 0.204 8 1/05/02 18:00  
 0.851 3 2/27/03 7:00  
 0.207 7 8/23/04 23:00  
 0.547 6 10/28/04 19:00  
 0.747 4 1/18/06 16:00  
 0.888 2 10/26/06 2:00  
 1.42 1 1/09/08 7:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 -- Peaks -- Rank Return Prob  
 (CFS) (ft) Period  
 1.42 3.03 1 100.00 0.990  
 0.888 3.02 2 25.00 0.960  
 0.851 3.02 3 10.00 0.900  
 0.747 3.01 4 5.00 0.800  
 0.707 3.01 5 3.00 0.667  
 0.547 3.01 6 2.00 0.500  
 0.207 2.66 7 1.30 0.231  
 0.204 2.64 8 1.10 0.091  
 1.24 3.03 50.00 0.980



KCRTS Program...File Directory:

C:\kc\_swdm\KC\_DATA\

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 0.00 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 1.07 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 0.00 | 0.00 | 0.000000 | Wetland         |
| 1.33 | 0.00 | 0.000000 | Impervious      |

OCEAN RIDGE SOUTH

or-c4.tsf

T

1.00000

T

[T] Enter the Analysis TOOLS Module

[P] Compute PEAKS and Flow Frequencies

or-c4.tsf

or-c4.pks

[R] RETURN to Previous Menu

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 0.00 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 1.44 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 0.00 | 0.00 | 0.000000 | Wetland         |
| 1.19 | 0.00 | 0.000000 | Impervious      |

OCEAN RIDGE NORTH

or-c5.tsf

T

1.00000

T

[T] Enter the Analysis TOOLS Module

[P] Compute PEAKS and Flow Frequencies

or-c5.tsf

or-c5.pks

[R] RETURN to Previous Menu

[C] CREATE a new Time Series

ST

|      |      |          |                 |
|------|------|----------|-----------------|
| 0.00 | 0.00 | 0.000000 | Till Forest     |
| 0.00 | 0.00 | 0.000000 | Till Pasture    |
| 0.26 | 0.00 | 0.000000 | Till Grass      |
| 0.00 | 0.00 | 0.000000 | Outwash Forest  |
| 0.00 | 0.00 | 0.000000 | Outwash Pasture |
| 0.00 | 0.00 | 0.000000 | Outwash Grass   |
| 0.00 | 0.00 | 0.000000 | Wetland         |
| 0.37 | 0.00 | 0.000000 | Impervious      |

REDONDO RIDGE

rr-cl.tsf

T

1.00000

T

[T] Enter the Analysis TOOLS Module

[P] Compute PEAKS and Flow Frequencies

rr-cl.tsf

rr-cl.pks

[R] RETURN to Previous Menu

[X] exit KCRTS Program

offsite.pks

Flow Frequency Analysis  
Time Series File:offsite.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       |
|------------------------------|------|--------------|-------|
| Flow Rate<br>(CFS)           | Rank | Time of Peak |       |
| 0.663                        | 5    | 2/09/01      | 5:00  |
| 0.463                        | 7    | 1/05/02      | 17:00 |
| 0.698                        | 4    | 2/27/03      | 9:00  |
| 0.442                        | 8    | 8/26/04      | 3:00  |
| 0.584                        | 6    | 10/28/04     | 18:00 |
| 0.778                        | 3    | 1/18/06      | 17:00 |
| 0.840                        | 2    | 11/24/06     | 5:00  |
| 1.80                         | 1    | 1/09/08      | 7:00  |
| Computed Peaks               |      |              |       |

| -----Flow Frequency Analysis----- |      |                  |       |
|-----------------------------------|------|------------------|-------|
| - - Peaks - -                     | Rank | Return<br>Period | Prob  |
| 1.80                              | 1    | 100.00           | 0.990 |
| 0.840                             | 2    | 25.00            | 0.960 |
| 0.778                             | 3    | 10.00            | 0.900 |
| 0.698                             | 4    | 5.00             | 0.800 |
| 0.663                             | 5    | 3.00             | 0.667 |
| 0.584                             | 6    | 2.00             | 0.500 |
| 0.463                             | 7    | 1.30             | 0.231 |
| 0.442                             | 8    | 1.10             | 0.091 |
| 1.48                              |      | 50.00            | 0.980 |

dev.pks

Flow Frequency Analysis  
 Time Series File:dev.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.417 5 2/09/01 2:00  
 0.320 8 1/05/02 16:00  
 0.506 2 2/27/03 7:00  
 0.324 7 8/26/04 2:00  
 0.395 6 10/28/04 16:00  
 0.441 4 1/18/06 16:00  
 0.469 3 10/26/06 0:00  
 0.867 1 1/09/08 6:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) Period  
 0.867 1 100.00 0.990  
 0.506 2 25.00 0.960  
 0.469 3 10.00 0.900  
 0.441 4 5.00 0.800  
 0.417 5 3.00 0.667  
 0.395 6 2.00 0.500  
 0.324 7 1.30 0.231  
 0.320 8 1.10 0.091  
 0.747 50.00 0.980



## Retention/Detention Facility

Type of Facility: Detention Tank  
 Tank Diameter: 7.00 ft  
 Tank Length: 96.50 ft  
 Effective Storage Depth: 7.00 ft  
 Stage 0 Elevation: 376.00 ft  
 Storage Volume: 3714. cu. ft  
 Riser Head: 7.00 ft  
 Riser Diameter: 12.00 inches  
 Number of orifices: 1

| Orifice # | Height<br>(ft) | Diameter<br>(in) | Full Head<br>Discharge<br>(CFS) | Pipe<br>Diameter<br>(in) |
|-----------|----------------|------------------|---------------------------------|--------------------------|
| 1         | 0.00           | 1.94             | 0.280                           |                          |

Top Notch Weir: None  
 Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | Storage<br>(ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) |
|---------------|-------------------|---------------------|--------------------|--------------------|----------------------|
| 0.00          | 376.00            | 0.                  | 0.000              | 0.000              | 0.00                 |
| 0.02          | 376.02            | 1.                  | 0.000              | 0.015              | 0.00                 |
| 0.04          | 376.04            | 3.                  | 0.000              | 0.021              | 0.00                 |
| 0.06          | 376.06            | 5.                  | 0.000              | 0.025              | 0.00                 |
| 0.08          | 376.08            | 8.                  | 0.000              | 0.029              | 0.00                 |
| 0.10          | 376.10            | 11.                 | 0.000              | 0.032              | 0.00                 |
| 0.12          | 376.12            | 14.                 | 0.000              | 0.036              | 0.00                 |
| 0.14          | 376.14            | 18.                 | 0.000              | 0.038              | 0.00                 |
| 0.16          | 376.16            | 22.                 | 0.000              | 0.041              | 0.00                 |
| 0.27          | 376.27            | 47.                 | 0.001              | 0.053              | 0.00                 |
| 0.37          | 376.37            | 75.                 | 0.002              | 0.062              | 0.00                 |
| 0.48          | 376.48            | 111.                | 0.003              | 0.070              | 0.00                 |
| 0.58          | 376.58            | 147.                | 0.003              | 0.078              | 0.00                 |
| 0.68          | 376.68            | 185.                | 0.004              | 0.084              | 0.00                 |
| 0.79          | 376.79            | 231.                | 0.005              | 0.091              | 0.00                 |
| 0.89          | 376.89            | 275.                | 0.006              | 0.096              | 0.00                 |
| 1.00          | 377.00            | 325.                | 0.007              | 0.102              | 0.00                 |
| 1.10          | 377.10            | 374.                | 0.009              | 0.107              | 0.00                 |
| 1.21          | 377.21            | 429.                | 0.010              | 0.112              | 0.00                 |
| 1.31          | 377.31            | 481.                | 0.011              | 0.117              | 0.00                 |
| 1.42          | 377.42            | 540.                | 0.012              | 0.121              | 0.00                 |
| 1.52          | 377.52            | 595.                | 0.014              | 0.126              | 0.00                 |
| 1.62          | 377.62            | 651.                | 0.015              | 0.130              | 0.00                 |
| 1.73          | 377.73            | 714.                | 0.016              | 0.134              | 0.00                 |
| 1.83          | 377.83            | 773.                | 0.018              | 0.138              | 0.00                 |
| 1.94          | 377.94            | 839.                | 0.019              | 0.142              | 0.00                 |
| 2.04          | 378.04            | 900.                | 0.021              | 0.146              | 0.00                 |
| 2.15          | 378.15            | 968.                | 0.022              | 0.150              | 0.00                 |
| 2.25          | 378.25            | 1031.               | 0.024              | 0.153              | 0.00                 |
| 2.36          | 378.36            | 1101.               | 0.025              | 0.157              | 0.00                 |
| 2.46          | 378.46            | 1165.               | 0.027              | 0.160              | 0.00                 |
| 2.56          | 378.56            | 1230.               | 0.028              | 0.163              | 0.00                 |
| 2.67          | 378.67            | 1302.               | 0.030              | 0.167              | 0.00                 |
| 2.77          | 378.77            | 1367.               | 0.031              | 0.170              | 0.00                 |

|      |        |       |       |       |      |
|------|--------|-------|-------|-------|------|
| 2.88 | 378.88 | 1440. | 0.033 | 0.173 | 0.00 |
| 2.98 | 378.98 | 1507. | 0.035 | 0.176 | 0.00 |
| 3.09 | 379.09 | 1581. | 0.036 | 0.179 | 0.00 |
| 3.19 | 379.19 | 1648. | 0.038 | 0.182 | 0.00 |
| 3.30 | 379.30 | 1722. | 0.040 | 0.185 | 0.00 |
| 3.40 | 379.40 | 1789. | 0.041 | 0.188 | 0.00 |
| 3.50 | 379.50 | 1857. | 0.043 | 0.191 | 0.00 |
| 3.61 | 379.61 | 1931. | 0.044 | 0.194 | 0.00 |
| 3.71 | 379.71 | 1999. | 0.046 | 0.197 | 0.00 |
| 3.82 | 379.82 | 2073. | 0.048 | 0.199 | 0.00 |
| 3.92 | 379.92 | 2140. | 0.049 | 0.202 | 0.00 |
| 4.03 | 380.03 | 2214. | 0.051 | 0.205 | 0.00 |
| 4.13 | 380.13 | 2280. | 0.052 | 0.208 | 0.00 |
| 4.24 | 380.24 | 2353. | 0.054 | 0.210 | 0.00 |
| 4.34 | 380.34 | 2419. | 0.056 | 0.213 | 0.00 |
| 4.45 | 380.45 | 2491. | 0.057 | 0.215 | 0.00 |
| 4.55 | 380.55 | 2555. | 0.059 | 0.218 | 0.00 |
| 4.65 | 380.65 | 2620. | 0.060 | 0.220 | 0.00 |
| 4.76 | 380.76 | 2689. | 0.062 | 0.223 | 0.00 |
| 4.86 | 380.86 | 2752. | 0.063 | 0.225 | 0.00 |
| 4.97 | 380.97 | 2820. | 0.065 | 0.228 | 0.00 |
| 5.07 | 381.07 | 2881. | 0.066 | 0.230 | 0.00 |
| 5.18 | 381.18 | 2947. | 0.068 | 0.232 | 0.00 |
| 5.28 | 381.28 | 3005. | 0.069 | 0.235 | 0.00 |
| 5.39 | 381.39 | 3069. | 0.070 | 0.237 | 0.00 |
| 5.49 | 381.49 | 3125. | 0.072 | 0.239 | 0.00 |
| 5.59 | 381.59 | 3180. | 0.073 | 0.241 | 0.00 |
| 5.70 | 381.70 | 3238. | 0.074 | 0.244 | 0.00 |
| 5.80 | 381.80 | 3290. | 0.076 | 0.246 | 0.00 |
| 5.91 | 381.91 | 3345. | 0.077 | 0.248 | 0.00 |
| 6.01 | 382.01 | 3393. | 0.078 | 0.250 | 0.00 |
| 6.12 | 382.12 | 3444. | 0.079 | 0.252 | 0.00 |
| 6.22 | 382.22 | 3487. | 0.080 | 0.255 | 0.00 |
| 6.33 | 382.33 | 3533. | 0.081 | 0.257 | 0.00 |
| 6.43 | 382.43 | 3571. | 0.082 | 0.259 | 0.00 |
| 6.53 | 382.53 | 3606. | 0.083 | 0.261 | 0.00 |
| 6.64 | 382.64 | 3641. | 0.084 | 0.263 | 0.00 |
| 6.74 | 382.74 | 3669. | 0.084 | 0.265 | 0.00 |
| 6.85 | 382.85 | 3694. | 0.085 | 0.267 | 0.00 |
| 6.95 | 382.95 | 3710. | 0.085 | 0.269 | 0.00 |
| 7.00 | 383.00 | 3714. | 0.085 | 0.270 | 0.00 |
| 7.10 | 383.10 | 3714. | 0.085 | 0.580 | 0.00 |
| 7.20 | 383.20 | 3714. | 0.085 | 1.150 | 0.00 |
| 7.30 | 383.30 | 3714. | 0.085 | 1.880 | 0.00 |
| 7.40 | 383.40 | 3714. | 0.085 | 2.670 | 0.00 |
| 7.50 | 383.50 | 3714. | 0.085 | 2.950 | 0.00 |
| 7.60 | 383.60 | 3714. | 0.085 | 3.210 | 0.00 |
| 7.70 | 383.70 | 3714. | 0.085 | 3.450 | 0.00 |
| 7.80 | 383.80 | 3714. | 0.085 | 3.670 | 0.00 |
| 7.90 | 383.90 | 3714. | 0.085 | 3.870 | 0.00 |
| 8.00 | 384.00 | 3714. | 0.085 | 4.070 | 0.00 |
| 8.10 | 384.10 | 3714. | 0.085 | 4.260 | 0.00 |
| 8.20 | 384.20 | 3714. | 0.085 | 4.440 | 0.00 |
| 8.30 | 384.30 | 3714. | 0.085 | 4.610 | 0.00 |
| 8.40 | 384.40 | 3714. | 0.085 | 4.770 | 0.00 |
| 8.50 | 384.50 | 3714. | 0.085 | 4.930 | 0.00 |
| 8.60 | 384.60 | 3714. | 0.085 | 5.080 | 0.00 |

|      |        |       |       |       |      |
|------|--------|-------|-------|-------|------|
| 8.70 | 384.70 | 3714. | 0.085 | 5.230 | 0.00 |
| 8.80 | 384.80 | 3714. | 0.085 | 5.380 | 0.00 |
| 8.90 | 384.90 | 3714. | 0.085 | 5.520 | 0.00 |

| Hyd | Inflow | Outflow |      | Peak  |        | Storage |         |
|-----|--------|---------|------|-------|--------|---------|---------|
|     |        | Target  | Calc | Stage | Elev   | (Cu-Ft) | (Ac-Ft) |
| 1   | 0.87   | *****   | 0.87 | 7.15  | 383.15 | 3714.   | 0.085   |
| 2   | 0.41   | *****   | 0.41 | 7.04  | 383.04 | 3714.   | 0.085   |
| 3   | 0.44   | *****   | 0.30 | 7.01  | 383.01 | 3714.   | 0.085   |
| 4   | 0.42   | *****   | 0.27 | 6.97  | 382.97 | 3712.   | 0.085   |
| 5   | 0.51   | *****   | 0.26 | 6.64  | 382.64 | 3640.   | 0.084   |
| 6   | 0.39   | *****   | 0.21 | 4.20  | 380.20 | 2325.   | 0.053   |
| 7   | 0.32   | *****   | 0.17 | 2.72  | 378.72 | 1335.   | 0.031   |
| 8   | 0.32   | *****   | 0.15 | 2.26  | 378.26 | 1040.   | 0.024   |

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Route Time Series through Facility  
Inflow Time Series File:dev.tsf  
Outflow Time Series File:rdout

#### Inflow/Outflow Analysis

Peak Inflow Discharge: 0.867 CFS at 6:00 on Jan 9 in Year 8  
Peak Outflow Discharge: 0.867 CFS at 7:00 on Jan 9 in Year 8  
Peak Reservoir Stage: 7.15 Ft  
Peak Reservoir Elev: 383.15 Ft  
Peak Reservoir Storage: 3714. Cu-Ft  
: 0.085 Ac-Ft

#### Flow Frequency Analysis

Time Series File:rdout.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |        |              |
|------------------------------|------|--------------|-------|-----------------------------------|------|--------|--------------|
| Flow Rate                    | Rank | Time of Peak |       | - - Peaks - -                     | Rank | Return | Prob         |
| (CFS)                        |      |              |       | (CFS)                             | (ft) | Period |              |
| 0.269                        | 4    | 2/09/01      | 16:00 | 0.867                             | 7.15 | 1      | 100.00 0.990 |
| 0.168                        | 7    | 1/05/02      | 17:00 | 0.409                             | 7.04 | 2      | 25.00 0.960  |
| 0.263                        | 5    | 2/27/03      | 10:00 | 0.302                             | 7.01 | 3      | 10.00 0.900  |
| 0.153                        | 8    | 8/26/04      | 3:00  | 0.269                             | 6.97 | 4      | 5.00 0.800   |
| 0.209                        | 6    | 10/28/04     | 19:00 | 0.263                             | 6.63 | 5      | 3.00 0.667   |
| 0.302                        | 3    | 1/18/06      | 17:00 | 0.209                             | 4.20 | 6      | 2.00 0.500   |
| 0.409                        | 2    | 11/24/06     | 5:00  | 0.168                             | 2.72 | 7      | 1.30 0.231   |
| 0.867                        | 1    | 1/09/08      | 7:00  | 0.153                             | 2.26 | 8      | 1.10 0.091   |
| Computed Peaks               |      |              |       | 0.714                             | 7.12 |        | 50.00 0.980  |

#### Flow Duration from Time Series File:rdout.tsf

| Cutoff | Count | Frequency | CDF    | Exceedence | Probability |
|--------|-------|-----------|--------|------------|-------------|
| CFS    |       | %         | %      | %          |             |
| 0.006  | 49177 | 80.197    | 80.197 | 19.803     | 0.198E+00   |
| 0.017  | 5948  | 9.700     | 89.897 | 10.103     | 0.101E+00   |
| 0.029  | 2094  | 3.415     | 93.312 | 6.688      | 0.669E-01   |
| 0.040  | 1139  | 1.857     | 95.170 | 4.830      | 0.483E-01   |
| 0.052  | 744   | 1.213     | 96.383 | 3.617      | 0.362E-01   |
| 0.063  | 514   | 0.838     | 97.221 | 2.779      | 0.278E-01   |
| 0.075  | 403   | 0.657     | 97.878 | 2.122      | 0.212E-01   |
| 0.086  | 321   | 0.523     | 98.402 | 1.598      | 0.160E-01   |
| 0.098  | 250   | 0.408     | 98.810 | 1.190      | 0.119E-01   |



|       |     |       |        |       |           |
|-------|-----|-------|--------|-------|-----------|
| 0.109 | 164 | 0.267 | 99.077 | 0.923 | 0.923E-02 |
| 0.121 | 137 | 0.223 | 99.300 | 0.700 | 0.700E-02 |
| 0.132 | 94  | 0.153 | 99.454 | 0.546 | 0.546E-02 |
| 0.144 | 71  | 0.116 | 99.569 | 0.431 | 0.431E-02 |
| 0.155 | 63  | 0.103 | 99.672 | 0.328 | 0.328E-02 |
| 0.167 | 50  | 0.082 | 99.754 | 0.246 | 0.246E-02 |
| 0.178 | 38  | 0.062 | 99.816 | 0.184 | 0.184E-02 |
| 0.190 | 25  | 0.041 | 99.856 | 0.144 | 0.144E-02 |
| 0.201 | 16  | 0.026 | 99.883 | 0.117 | 0.117E-02 |
| 0.213 | 21  | 0.034 | 99.917 | 0.083 | 0.832E-03 |
| 0.224 | 8   | 0.013 | 99.930 | 0.070 | 0.701E-03 |
| 0.236 | 6   | 0.010 | 99.940 | 0.060 | 0.603E-03 |
| 0.247 | 14  | 0.023 | 99.962 | 0.038 | 0.375E-03 |
| 0.258 | 5   | 0.008 | 99.971 | 0.029 | 0.294E-03 |
| 0.270 | 15  | 0.024 | 99.995 | 0.005 | 0.489E-04 |
| 0.281 | 0   | 0.000 | 99.995 | 0.005 | 0.489E-04 |
| 0.293 | 0   | 0.000 | 99.995 | 0.005 | 0.489E-04 |
| 0.304 | 2   | 0.003 | 99.998 | 0.002 | 0.163E-04 |
| 0.316 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.327 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.339 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.350 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.362 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.373 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.385 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.396 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |
| 0.408 | 0   | 0.000 | 99.998 | 0.002 | 0.163E-04 |

rdout.pks

Flow Frequency Analysis  
 Time Series File:rdout.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.269 4 2/09/01 16:00  
 0.168 7 1/05/02 17:00  
 0.263 5 2/27/03 10:00  
 0.153 8 8/26/04 3:00  
 0.209 6 10/28/04 19:00  
 0.302 3 1/18/06 17:00  
 0.409 2 11/24/06 5:00  
 0.867 1 1/09/08 7:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) (ft) Period  
 0.867 7.15 1 100.00 0.990  
 0.409 7.04 2 25.00 0.960  
 0.302 7.01 3 10.00 0.900  
 0.269 6.97 4 5.00 0.800  
 0.263 6.63 5 3.00 0.667  
 0.209 4.20 6 2.00 0.500  
 0.168 2.72 7 1.30 0.231  
 0.153 2.26 8 1.10 0.091  
 0.714 7.12 50.00 0.980

dev.pks

Flow Frequency Analysis  
Time Series File:dev.tsf  
Project Location:Sea-Tac

---Annual Peak Flow Rates---  
Flow Rate Rank Time of Peak  
(CFS)  
0.418 6 2/09/01 2:00  
0.333 8 1/05/02 16:00  
0.504 3 2/27/03 7:00  
0.351 7 8/26/04 2:00  
0.425 5 10/28/04 16:00  
0.443 4 1/18/06 16:00  
0.511 2 10/26/06 0:00  
0.855 1 1/09/08 6:00  
Computed Peaks

-----Flow Frequency Analysis-----  
- - Peaks - - Rank Return Prob  
(CFS) Period  
0.855 1 100.00 0.990  
0.511 2 25.00 0.960  
0.504 3 10.00 0.900  
0.443 4 5.00 0.800  
0.425 5 3.00 0.667  
0.418 6 2.00 0.500  
0.351 7 1.30 0.231  
0.333 8 1.10 0.091  
0.740 50.00 0.980



## Retention/Detention Facility

Type of Facility: Detention Tank  
 Tank Diameter: 5.00 ft  
 Tank Length: 80.00 ft  
 Effective Storage Depth: 5.00 ft  
 Stage 0 Elevation: 388.00 ft  
 Storage Volume: 1571. cu. ft  
 Riser Head: 5.00 ft  
 Riser Diameter: 12.00 inches  
 Number of orifices: 1

| Orifice # | Height<br>(ft) | Diameter<br>(in) | Full Head<br>Discharge<br>(CFS) | Pipe<br>Diameter<br>(in) |
|-----------|----------------|------------------|---------------------------------|--------------------------|
| 1         | 0.00           | 2.42             | 0.355                           |                          |

Top Notch Weir: None  
 Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | (ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) |
|---------------|-------------------|---------------------|---------|--------------------|----------------------|
| 0.00          | 388.00            | 0.                  | 0.000   | 0.000              | 0.00                 |
| 0.03          | 388.03            | 1.                  | 0.000   | 0.025              | 0.00                 |
| 0.05          | 388.05            | 3.                  | 0.000   | 0.036              | 0.00                 |
| 0.08          | 388.08            | 5.                  | 0.000   | 0.044              | 0.00                 |
| 0.10          | 388.10            | 8.                  | 0.000   | 0.050              | 0.00                 |
| 0.13          | 388.13            | 11.                 | 0.000   | 0.056              | 0.00                 |
| 0.15          | 388.15            | 14.                 | 0.000   | 0.062              | 0.00                 |
| 0.18          | 388.18            | 18.                 | 0.000   | 0.067              | 0.00                 |
| 0.20          | 388.20            | 21.                 | 0.000   | 0.071              | 0.00                 |
| 0.30          | 388.30            | 39.                 | 0.001   | 0.087              | 0.00                 |
| 0.40          | 388.40            | 59.                 | 0.001   | 0.101              | 0.00                 |
| 0.50          | 388.50            | 82.                 | 0.002   | 0.113              | 0.00                 |
| 0.60          | 388.60            | 107.                | 0.002   | 0.123              | 0.00                 |
| 0.70          | 388.70            | 134.                | 0.003   | 0.133              | 0.00                 |
| 0.80          | 388.80            | 162.                | 0.004   | 0.142              | 0.00                 |
| 0.90          | 388.90            | 192.                | 0.004   | 0.151              | 0.00                 |
| 1.00          | 389.00            | 224.                | 0.005   | 0.159              | 0.00                 |
| 1.10          | 389.10            | 256.                | 0.006   | 0.167              | 0.00                 |
| 1.20          | 389.20            | 290.                | 0.007   | 0.174              | 0.00                 |
| 1.30          | 389.30            | 325.                | 0.007   | 0.181              | 0.00                 |
| 1.40          | 389.40            | 360.                | 0.008   | 0.188              | 0.00                 |
| 1.50          | 389.50            | 396.                | 0.009   | 0.195              | 0.00                 |
| 1.60          | 389.60            | 433.                | 0.010   | 0.201              | 0.00                 |
| 1.70          | 389.70            | 471.                | 0.011   | 0.207              | 0.00                 |
| 1.80          | 389.80            | 509.                | 0.012   | 0.213              | 0.00                 |
| 1.90          | 389.90            | 548.                | 0.013   | 0.219              | 0.00                 |
| 2.00          | 390.00            | 587.                | 0.013   | 0.225              | 0.00                 |
| 2.10          | 390.10            | 626.                | 0.014   | 0.230              | 0.00                 |
| 2.20          | 390.20            | 666.                | 0.015   | 0.236              | 0.00                 |
| 2.30          | 390.30            | 706.                | 0.016   | 0.241              | 0.00                 |
| 2.40          | 390.40            | 745.                | 0.017   | 0.246              | 0.00                 |
| 2.50          | 390.50            | 785.                | 0.018   | 0.251              | 0.00                 |
| 2.60          | 390.60            | 825.                | 0.019   | 0.256              | 0.00                 |
| 2.70          | 390.70            | 865.                | 0.020   | 0.261              | 0.00                 |

|      |        |       |       |       |      |
|------|--------|-------|-------|-------|------|
| 2.80 | 390.80 | 905.  | 0.021 | 0.266 | 0.00 |
| 2.90 | 390.90 | 945.  | 0.022 | 0.271 | 0.00 |
| 3.00 | 391.00 | 984.  | 0.023 | 0.275 | 0.00 |
| 3.10 | 391.10 | 1023. | 0.023 | 0.280 | 0.00 |
| 3.20 | 391.20 | 1062. | 0.024 | 0.284 | 0.00 |
| 3.30 | 391.30 | 1100. | 0.025 | 0.289 | 0.00 |
| 3.40 | 391.40 | 1138. | 0.026 | 0.293 | 0.00 |
| 3.50 | 391.50 | 1175. | 0.027 | 0.297 | 0.00 |
| 3.60 | 391.60 | 1211. | 0.028 | 0.301 | 0.00 |
| 3.70 | 391.70 | 1246. | 0.029 | 0.306 | 0.00 |
| 3.80 | 391.80 | 1281. | 0.029 | 0.310 | 0.00 |
| 3.90 | 391.90 | 1315. | 0.030 | 0.314 | 0.00 |
| 4.00 | 392.00 | 1347. | 0.031 | 0.318 | 0.00 |
| 4.10 | 392.10 | 1379. | 0.032 | 0.322 | 0.00 |
| 4.20 | 392.20 | 1409. | 0.032 | 0.326 | 0.00 |
| 4.30 | 392.30 | 1437. | 0.033 | 0.329 | 0.00 |
| 4.40 | 392.40 | 1464. | 0.034 | 0.333 | 0.00 |
| 4.50 | 392.50 | 1489. | 0.034 | 0.337 | 0.00 |
| 4.60 | 392.60 | 1512. | 0.035 | 0.341 | 0.00 |
| 4.70 | 392.70 | 1532. | 0.035 | 0.344 | 0.00 |
| 4.80 | 392.80 | 1550. | 0.036 | 0.348 | 0.00 |
| 4.90 | 392.90 | 1563. | 0.036 | 0.352 | 0.00 |
| 5.00 | 393.00 | 1571. | 0.036 | 0.355 | 0.00 |
| 5.10 | 393.10 | 1571. | 0.036 | 0.667 | 0.00 |
| 5.20 | 393.20 | 1571. | 0.036 | 1.230 | 0.00 |
| 5.30 | 393.30 | 1571. | 0.036 | 1.970 | 0.00 |
| 5.40 | 393.40 | 1571. | 0.036 | 2.760 | 0.00 |
| 5.50 | 393.50 | 1571. | 0.036 | 3.050 | 0.00 |
| 5.60 | 393.60 | 1571. | 0.036 | 3.310 | 0.00 |
| 5.70 | 393.70 | 1571. | 0.036 | 3.540 | 0.00 |
| 5.80 | 393.80 | 1571. | 0.036 | 3.770 | 0.00 |
| 5.90 | 393.90 | 1571. | 0.036 | 3.970 | 0.00 |
| 6.00 | 394.00 | 1571. | 0.036 | 4.170 | 0.00 |
| 6.10 | 394.10 | 1571. | 0.036 | 4.360 | 0.00 |
| 6.20 | 394.20 | 1571. | 0.036 | 4.540 | 0.00 |
| 6.30 | 394.30 | 1571. | 0.036 | 4.710 | 0.00 |
| 6.40 | 394.40 | 1571. | 0.036 | 4.880 | 0.00 |
| 6.50 | 394.50 | 1571. | 0.036 | 5.040 | 0.00 |
| 6.60 | 394.60 | 1571. | 0.036 | 5.190 | 0.00 |
| 6.70 | 394.70 | 1571. | 0.036 | 5.340 | 0.00 |
| 6.80 | 394.80 | 1571. | 0.036 | 5.490 | 0.00 |
| 6.90 | 394.90 | 1571. | 0.036 | 5.630 | 0.00 |
| 7.00 | 395.00 | 1571. | 0.036 | 5.770 | 0.00 |

| Hyd | Inflow | Outflow |      | Peak  |        | Storage |         |
|-----|--------|---------|------|-------|--------|---------|---------|
|     |        | Target  | Calc | Stage | Elev   | (Cu-Ft) | (Ac-Ft) |
| 1   | 0.85   | *****   | 0.85 | 5.13  | 393.13 | 1571.   | 0.036   |
| 2   | 0.51   | *****   | 0.33 | 4.34  | 392.34 | 1449.   | 0.033   |
| 3   | 0.50   | *****   | 0.36 | 5.00  | 393.00 | 1571.   | 0.036   |
| 4   | 0.44   | *****   | 0.39 | 5.01  | 393.01 | 1571.   | 0.036   |
| 5   | 0.43   | *****   | 0.32 | 3.95  | 391.95 | 1332.   | 0.031   |
| 6   | 0.42   | *****   | 0.33 | 4.43  | 392.43 | 1472.   | 0.034   |
| 7   | 0.35   | *****   | 0.24 | 2.29  | 390.29 | 702.    | 0.016   |
| 8   | 0.33   | *****   | 0.24 | 2.26  | 390.26 | 688.    | 0.016   |

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Route Time Series through Facility

Inflow Time Series File:dev.tsf  
 Outflow Time Series File:rdout

# Inflow/Outflow Analysis

Peak Inflow Discharge: 0.855 CFS at 6:00 on Jan 9 in Year 8  
 Peak Outflow Discharge: 0.855 CFS at 7:00 on Jan 9 in Year 8  
 Peak Reservoir Stage: 5.13 Ft  
 Peak Reservoir Elev: 393.13 Ft  
 Peak Reservoir Storage: 1571. Cu-Ft  
 : 0.036 Ac-Ft

## Flow Frequency Analysis

Time Series File:rdout.tsf  
 Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |              |                  |              |
|------------------------------|------|--------------|-------|-----------------------------------|--------------|------------------|--------------|
| Flow Rate<br>(CFS)           | Rank | Time of Peak |       | - - Peaks - -<br>(CFS)            | Rank<br>(ft) | Return<br>Period | Prob         |
| 0.334                        | 5    | 2/09/01      | 5:00  | 0.855                             | 5.13         | 1                | 100.00 0.990 |
| 0.239                        | 8    | 1/05/02      | 17:00 | 0.402                             | 5.02         | 2                | 25.00 0.960  |
| 0.361                        | 4    | 2/27/03      | 9:00  | 0.393                             | 5.01         | 3                | 10.00 0.900  |
| 0.241                        | 7    | 8/26/04      | 3:00  | 0.361                             | 5.00         | 4                | 5.00 0.800   |
| 0.316                        | 6    | 10/28/04     | 18:00 | 0.334                             | 4.43         | 5                | 3.00 0.667   |
| 0.393                        | 3    | 1/18/06      | 17:00 | 0.316                             | 3.95         | 6                | 2.00 0.500   |
| 0.402                        | 2    | 11/24/06     | 4:00  | 0.241                             | 2.29         | 7                | 1.30 0.231   |
| 0.855                        | 1    | 1/09/08      | 7:00  | 0.239                             | 2.26         | 8                | 1.10 0.091   |
| Computed Peaks               |      |              |       | 0.704                             | 5.11         | 50.00            | 0.980        |

## Flow Duration from Time Series File:rdout.tsf

| Cutoff<br>CFS | Count | Frequency<br>% | CDF<br>% | Exceedence<br>% | Probability |
|---------------|-------|----------------|----------|-----------------|-------------|
| 0.006         | 49876 | 81.337         | 81.337   | 18.663          | 0.187E+00   |
| 0.017         | 5639  | 9.196          | 90.533   | 9.467           | 0.947E-01   |
| 0.028         | 1835  | 2.992          | 93.526   | 6.474           | 0.647E-01   |
| 0.040         | 1113  | 1.815          | 95.341   | 4.659           | 0.466E-01   |
| 0.051         | 674   | 1.099          | 96.440   | 3.560           | 0.356E-01   |
| 0.062         | 501   | 0.817          | 97.257   | 2.743           | 0.274E-01   |
| 0.074         | 372   | 0.607          | 97.864   | 2.136           | 0.214E-01   |
| 0.085         | 267   | 0.435          | 98.299   | 1.701           | 0.170E-01   |
| 0.096         | 206   | 0.336          | 98.635   | 1.365           | 0.136E-01   |
| 0.107         | 155   | 0.253          | 98.888   | 1.112           | 0.111E-01   |
| 0.119         | 124   | 0.202          | 99.090   | 0.910           | 0.910E-02   |
| 0.130         | 99    | 0.161          | 99.251   | 0.749           | 0.749E-02   |
| 0.141         | 79    | 0.129          | 99.380   | 0.620           | 0.620E-02   |
| 0.153         | 62    | 0.101          | 99.481   | 0.519           | 0.519E-02   |
| 0.164         | 53    | 0.086          | 99.568   | 0.432           | 0.432E-02   |
| 0.175         | 39    | 0.064          | 99.631   | 0.369           | 0.369E-02   |
| 0.187         | 37    | 0.060          | 99.692   | 0.308           | 0.308E-02   |
| 0.198         | 30    | 0.049          | 99.741   | 0.259           | 0.259E-02   |
| 0.209         | 28    | 0.046          | 99.786   | 0.214           | 0.214E-02   |
| 0.220         | 24    | 0.039          | 99.826   | 0.174           | 0.174E-02   |
| 0.232         | 20    | 0.033          | 99.858   | 0.142           | 0.142E-02   |
| 0.243         | 19    | 0.031          | 99.889   | 0.111           | 0.111E-02   |
| 0.254         | 9     | 0.015          | 99.904   | 0.096           | 0.962E-03   |
| 0.266         | 12    | 0.020          | 99.923   | 0.077           | 0.766E-03   |
| 0.277         | 8     | 0.013          | 99.936   | 0.064           | 0.636E-03   |
| 0.288         | 8     | 0.013          | 99.949   | 0.051           | 0.506E-03   |



|       |   |       |        |       |           |
|-------|---|-------|--------|-------|-----------|
| 0.300 | 7 | 0.011 | 99.961 | 0.039 | 0.391E-03 |
| 0.311 | 6 | 0.010 | 99.971 | 0.029 | 0.294E-03 |
| 0.322 | 5 | 0.008 | 99.979 | 0.021 | 0.212E-03 |
| 0.333 | 4 | 0.007 | 99.985 | 0.015 | 0.147E-03 |
| 0.345 | 2 | 0.003 | 99.989 | 0.011 | 0.114E-03 |
| 0.356 | 2 | 0.003 | 99.992 | 0.008 | 0.815E-04 |
| 0.367 | 3 | 0.005 | 99.997 | 0.003 | 0.326E-04 |
| 0.379 | 0 | 0.000 | 99.997 | 0.003 | 0.326E-04 |
| 0.390 | 0 | 0.000 | 99.997 | 0.003 | 0.326E-04 |
| 0.401 | 1 | 0.002 | 99.998 | 0.002 | 0.163E-04 |

-----  
Route Time Series through Facility  
Inflow Time Series File:dev.tsf  
Outflow Time Series File:rdout

#### Inflow/Outflow Analysis

|                         |              |             |             |
|-------------------------|--------------|-------------|-------------|
| Peak Inflow Discharge:  | 0.855 CFS at | 6:00 on Jan | 9 in Year 8 |
| Peak Outflow Discharge: | 0.855 CFS at | 7:00 on Jan | 9 in Year 8 |
| Peak Reservoir Stage:   | 5.13         | Ft          |             |
| Peak Reservoir Elev:    | 393.13       | Ft          |             |
| Peak Reservoir Storage: | 1571.        | Cu-Ft       |             |
| :                       | 0.036        | Ac-Ft       |             |

#### Flow Frequency Analysis

Time Series File:rdout.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |        |              |  |
|------------------------------|------|--------------|-------|-----------------------------------|------|--------|--------------|--|
| Flow Rate                    | Rank | Time of Peak |       | - - Peaks - -                     | Rank | Return | Prob         |  |
| (CFS)                        |      |              |       | (CFS)                             | (ft) | Period |              |  |
| 0.334                        | 5    | 2/09/01      | 5:00  | 0.855                             | 5.13 | 1      | 100.00 0.990 |  |
| 0.239                        | 8    | 1/05/02      | 17:00 | 0.402                             | 5.02 | 2      | 25.00 0.960  |  |
| 0.361                        | 4    | 2/27/03      | 9:00  | 0.393                             | 5.01 | 3      | 10.00 0.900  |  |
| 0.241                        | 7    | 8/26/04      | 3:00  | 0.361                             | 5.00 | 4      | 5.00 0.800   |  |
| 0.316                        | 6    | 10/28/04     | 18:00 | 0.334                             | 4.43 | 5      | 3.00 0.667   |  |
| 0.393                        | 3    | 1/18/06      | 17:00 | 0.316                             | 3.95 | 6      | 2.00 0.500   |  |
| 0.402                        | 2    | 11/24/06     | 4:00  | 0.241                             | 2.29 | 7      | 1.30 0.231   |  |
| 0.855                        | 1    | 1/09/08      | 7:00  | 0.239                             | 2.26 | 8      | 1.10 0.091   |  |
| Computed Peaks               |      |              |       | 0.704                             | 5.11 |        | 50.00 0.980  |  |

rdout.pks

Flow Frequency Analysis  
 Time Series File:rdout.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.334 5 2/09/01 5:00  
 0.239 8 1/05/02 17:00  
 0.361 4 2/27/03 9:00  
 0.241 7 8/26/04 3:00  
 0.316 6 10/28/04 18:00  
 0.393 3 1/18/06 17:00  
 0.402 2 11/24/06 4:00  
 0.855 1 1/09/08 7:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) (ft) Period  
 0.855 5.13 1 100.00 0.990  
 0.402 5.02 2 25.00 0.960  
 0.393 5.01 3 10.00 0.900  
 0.361 5.00 4 5.00 0.800  
 0.334 4.43 5 3.00 0.667  
 0.316 3.95 6 2.00 0.500  
 0.241 2.29 7 1.30 0.231  
 0.239 2.26 8 1.10 0.091  
 0.704 5.11 50.00 0.980

dev.pks

Flow Frequency Analysis  
Time Series File:dev.tsf  
Project Location:Sea-Tac

---Annual Peak Flow Rates---  
Flow Rate Rank Time of Peak  
(CFS)  
0.113 6 2/09/01 2:00  
0.091 8 1/05/02 16:00  
0.136 3 2/27/03 7:00  
0.097 7 8/26/04 2:00  
0.117 5 10/28/04 16:00  
0.120 4 1/18/06 16:00  
0.141 2 10/26/06 0:00  
0.230 1 1/09/08 6:00  
Computed Peaks

-----Flow Frequency Analysis-----  
- - Peaks - - Rank Return Prob  
(CFS) Period  
0.230 1 100.00 0.990  
0.141 2 25.00 0.960  
0.136 3 10.00 0.900  
0.120 4 5.00 0.800  
0.117 5 3.00 0.667  
0.113 6 2.00 0.500  
0.097 7 1.30 0.231  
0.091 8 1.10 0.091  
0.200 50.00 0.980



KEDONDO REACH  
FIRST TANK

Retention/Detention Facility

Type of Facility: Detention Tank  
 Tank Diameter: 6.00 ft  
 Tank Length: 70.60 ft  
 Effective Storage Depth: 6.00 ft  
 Stage 0 Elevation: 0.00 ft  
 Storage Volume: 1996. cu. ft  
 Riser Head: 6.00 ft  
 Riser Diameter: 12.00 inches  
 Number of orifices: 1

| Orifice # | Height<br>(ft) | Diameter<br>(in) | Full Head<br>Discharge<br>(CFS) | Pipe<br>Diameter<br>(in) |
|-----------|----------------|------------------|---------------------------------|--------------------------|
| 1         | 0.00           | 1.38             | 0.126                           |                          |

Top Notch Weir: None  
 Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | (ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) |
|---------------|-------------------|---------------------|---------|--------------------|----------------------|
| 0.00          | 0.00              | 0.                  | 0.000   | 0.000              | 0.00                 |
| 0.01          | 0.01              | 0.                  | 0.000   | 0.006              | 0.00                 |
| 0.03          | 0.03              | 1.                  | 0.000   | 0.009              | 0.00                 |
| 0.04          | 0.04              | 2.                  | 0.000   | 0.011              | 0.00                 |
| 0.06          | 0.06              | 3.                  | 0.000   | 0.012              | 0.00                 |
| 0.07          | 0.07              | 4.                  | 0.000   | 0.014              | 0.00                 |
| 0.09          | 0.09              | 6.                  | 0.000   | 0.015              | 0.00                 |
| 0.10          | 0.10              | 7.                  | 0.000   | 0.016              | 0.00                 |
| 0.11          | 0.11              | 8.                  | 0.000   | 0.017              | 0.00                 |
| 0.13          | 0.13              | 11.                 | 0.000   | 0.018              | 0.00                 |
| 0.23          | 0.23              | 25.                 | 0.001   | 0.025              | 0.00                 |
| 0.33          | 0.33              | 43.                 | 0.001   | 0.029              | 0.00                 |
| 0.43          | 0.43              | 64.                 | 0.001   | 0.034              | 0.00                 |
| 0.53          | 0.53              | 87.                 | 0.002   | 0.037              | 0.00                 |
| 0.63          | 0.63              | 112.                | 0.003   | 0.041              | 0.00                 |
| 0.73          | 0.73              | 138.                | 0.003   | 0.044              | 0.00                 |
| 0.83          | 0.83              | 167.                | 0.004   | 0.047              | 0.00                 |
| 0.93          | 0.93              | 197.                | 0.005   | 0.049              | 0.00                 |
| 1.03          | 1.03              | 228.                | 0.005   | 0.052              | 0.00                 |
| 1.13          | 1.13              | 261.                | 0.006   | 0.054              | 0.00                 |
| 1.23          | 1.23              | 294.                | 0.007   | 0.057              | 0.00                 |
| 1.33          | 1.33              | 329.                | 0.008   | 0.059              | 0.00                 |
| 1.43          | 1.43              | 365.                | 0.008   | 0.061              | 0.00                 |
| 1.53          | 1.53              | 401.                | 0.009   | 0.063              | 0.00                 |
| 1.63          | 1.63              | 439.                | 0.010   | 0.065              | 0.00                 |
| 1.73          | 1.73              | 477.                | 0.011   | 0.067              | 0.00                 |
| 1.83          | 1.83              | 515.                | 0.012   | 0.069              | 0.00                 |
| 1.93          | 1.93              | 555.                | 0.013   | 0.071              | 0.00                 |
| 2.03          | 2.03              | 595.                | 0.014   | 0.073              | 0.00                 |
| 2.13          | 2.13              | 635.                | 0.015   | 0.075              | 0.00                 |
| 2.23          | 2.23              | 676.                | 0.016   | 0.077              | 0.00                 |
| 2.33          | 2.33              | 717.                | 0.016   | 0.078              | 0.00                 |
| 2.43          | 2.43              | 758.                | 0.017   | 0.080              | 0.00                 |
| 2.53          | 2.53              | 800.                | 0.018   | 0.082              | 0.00                 |

|      |      |       |       |       |      |
|------|------|-------|-------|-------|------|
| 2.63 | 2.63 | 842.  | 0.019 | 0.083 | 0.00 |
| 2.73 | 2.73 | 884.  | 0.020 | 0.085 | 0.00 |
| 2.83 | 2.83 | 926.  | 0.021 | 0.086 | 0.00 |
| 2.93 | 2.93 | 968.  | 0.022 | 0.088 | 0.00 |
| 3.03 | 3.03 | 1011. | 0.023 | 0.089 | 0.00 |
| 3.13 | 3.13 | 1053. | 0.024 | 0.091 | 0.00 |
| 3.23 | 3.23 | 1095. | 0.025 | 0.092 | 0.00 |
| 3.33 | 3.33 | 1138. | 0.026 | 0.094 | 0.00 |
| 3.43 | 3.43 | 1180. | 0.027 | 0.095 | 0.00 |
| 3.53 | 3.53 | 1221. | 0.028 | 0.096 | 0.00 |
| 3.63 | 3.63 | 1263. | 0.029 | 0.098 | 0.00 |
| 3.73 | 3.73 | 1304. | 0.030 | 0.099 | 0.00 |
| 3.83 | 3.83 | 1345. | 0.031 | 0.100 | 0.00 |
| 3.93 | 3.93 | 1386. | 0.032 | 0.102 | 0.00 |
| 4.03 | 4.03 | 1426. | 0.033 | 0.103 | 0.00 |
| 4.13 | 4.13 | 1465. | 0.034 | 0.104 | 0.00 |
| 4.23 | 4.23 | 1504. | 0.035 | 0.105 | 0.00 |
| 4.33 | 4.33 | 1542. | 0.035 | 0.107 | 0.00 |
| 4.43 | 4.43 | 1580. | 0.036 | 0.108 | 0.00 |
| 4.53 | 4.53 | 1617. | 0.037 | 0.109 | 0.00 |
| 4.63 | 4.63 | 1653. | 0.038 | 0.110 | 0.00 |
| 4.73 | 4.73 | 1688. | 0.039 | 0.112 | 0.00 |
| 4.83 | 4.83 | 1722. | 0.040 | 0.113 | 0.00 |
| 4.93 | 4.93 | 1755. | 0.040 | 0.114 | 0.00 |
| 5.03 | 5.03 | 1787. | 0.041 | 0.115 | 0.00 |
| 5.13 | 5.13 | 1817. | 0.042 | 0.116 | 0.00 |
| 5.23 | 5.23 | 1847. | 0.042 | 0.117 | 0.00 |
| 5.33 | 5.33 | 1874. | 0.043 | 0.118 | 0.00 |
| 5.43 | 5.43 | 1900. | 0.044 | 0.119 | 0.00 |
| 5.53 | 5.53 | 1924. | 0.044 | 0.121 | 0.00 |
| 5.63 | 5.63 | 1945. | 0.045 | 0.122 | 0.00 |
| 5.73 | 5.73 | 1964. | 0.045 | 0.123 | 0.00 |
| 5.83 | 5.83 | 1980. | 0.045 | 0.124 | 0.00 |
| 5.93 | 5.93 | 1992. | 0.046 | 0.125 | 0.00 |
| 6.00 | 6.00 | 1996. | 0.046 | 0.126 | 0.00 |
| 6.10 | 6.10 | 1996. | 0.046 | 0.435 | 0.00 |
| 6.20 | 6.20 | 1996. | 0.046 | 0.999 | 0.00 |
| 6.30 | 6.30 | 1996. | 0.046 | 1.730 | 0.00 |
| 6.40 | 6.40 | 1996. | 0.046 | 2.520 | 0.00 |
| 6.50 | 6.50 | 1996. | 0.046 | 2.810 | 0.00 |
| 6.60 | 6.60 | 1996. | 0.046 | 3.060 | 0.00 |
| 6.70 | 6.70 | 1996. | 0.046 | 3.300 | 0.00 |
| 6.80 | 6.80 | 1996. | 0.046 | 3.520 | 0.00 |
| 6.90 | 6.90 | 1996. | 0.046 | 3.720 | 0.00 |
| 7.00 | 7.00 | 1996. | 0.046 | 3.920 | 0.00 |
| 7.10 | 7.10 | 1996. | 0.046 | 4.100 | 0.00 |
| 7.20 | 7.20 | 1996. | 0.046 | 4.280 | 0.00 |
| 7.30 | 7.30 | 1996. | 0.046 | 4.450 | 0.00 |
| 7.40 | 7.40 | 1996. | 0.046 | 4.610 | 0.00 |
| 7.50 | 7.50 | 1996. | 0.046 | 4.770 | 0.00 |
| 7.60 | 7.60 | 1996. | 0.046 | 4.930 | 0.00 |
| 7.70 | 7.70 | 1996. | 0.046 | 5.070 | 0.00 |
| 7.80 | 7.80 | 1996. | 0.046 | 5.220 | 0.00 |
| 7.90 | 7.90 | 1996. | 0.046 | 5.360 | 0.00 |
| 8.00 | 8.00 | 1996. | 0.046 | 5.490 | 0.00 |

Hyd Inflow

Outflow

Peak

Storage

|   |      |      | Stage | Elev | (Cu-Ft) | (Ac-Ft) |
|---|------|------|-------|------|---------|---------|
| 1 | 0.23 | 0.13 | 5.93  | 5.93 | 1992.   | 0.046   |
| 2 | 0.12 | 0.08 | 2.72  | 2.72 | 878.    | 0.020   |
| 3 | 0.11 | 0.08 | 2.57  | 2.57 | 817.    | 0.019   |
| 4 | 0.14 | 0.08 | 2.43  | 2.43 | 760.    | 0.017   |
| 5 | 0.11 | 0.08 | 2.24  | 2.24 | 679.    | 0.016   |
| 6 | 0.12 | 0.07 | 1.91  | 1.91 | 546.    | 0.013   |
| 7 | 0.09 | 0.06 | 1.18  | 1.18 | 279.    | 0.006   |
| 8 | 0.10 | 0.05 | 1.14  | 1.14 | 263.    | 0.006   |

| Hyd | R/D Facility | Tributary | Reservoir | POC Outflow |      |
|-----|--------------|-----------|-----------|-------------|------|
|     | Outflow      | Inflow    | Inflow    | Target      | Calc |
| 1   | 0.13         | 0.07      | *****     | *****       | 0.18 |
| 2   | 0.08         | 0.04      | *****     | *****       | 0.12 |
| 3   | 0.08         | 0.04      | *****     | *****       | 0.11 |
| 4   | 0.08         | 0.04      | *****     | *****       | 0.11 |
| 5   | 0.08         | 0.03      | *****     | *****       | 0.10 |
| 6   | 0.07         | 0.04      | *****     | *****       | 0.10 |
| 7   | 0.06         | 0.03      | *****     | *****       | 0.08 |
| 8   | 0.05         | 0.03      | *****     | *****       | 0.08 |

-----  
Route Time Series through Facility  
Inflow Time Series File:dev.tsf  
Outflow Time Series File:rdout.tsf  
POC Time Series File:dsout

#### Inflow/Outflow Analysis

Peak Inflow Discharge: 0.230 CFS at 6:00 on Jan 9 in Year 8  
Peak Outflow Discharge: 0.125 CFS at 10:00 on Jan 9 in Year 8  
Peak Reservoir Stage: 5.93 Ft  
Peak Reservoir Elev: 5.93 Ft  
Peak Reservoir Storage: 1992. Cu-Ft  
: 0.046 Ac-Ft

Add Time Series:dev-283rd.tsf

Peak Summed Discharge: 0.176 CFS at 9:00 on Jan 9 in Year 8  
Point of Compliance File:dsout.tsf  
Flow Frequency Analysis  
Time Series File:rdout.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |        |              |  |
|------------------------------|------|--------------|-------|-----------------------------------|------|--------|--------------|--|
| Flow Rate                    | Rank | Time of Peak |       | - - Peaks - -                     | Rank | Return | Prob         |  |
| (CFS)                        |      |              |       | (CFS)                             | (ft) | Period |              |  |
| 0.077                        | 5    | 2/09/01      | 5:00  | 0.125                             | 5.93 | 1      | 100.00 0.990 |  |
| 0.056                        | 7    | 1/05/02      | 17:00 | 0.085                             | 2.71 | 2      | 25.00 0.960  |  |
| 0.080                        | 4    | 2/27/03      | 9:00  | 0.082                             | 2.57 | 3      | 10.00 0.900  |  |
| 0.054                        | 8    | 8/26/04      | 3:00  | 0.080                             | 2.43 | 4      | 5.00 0.800   |  |
| 0.070                        | 6    | 10/28/04     | 19:00 | 0.077                             | 2.23 | 5      | 3.00 0.667   |  |
| 0.085                        | 2    | 1/18/06      | 17:00 | 0.070                             | 1.90 | 6      | 2.00 0.500   |  |
| 0.082                        | 3    | 11/24/06     | 5:00  | 0.056                             | 1.18 | 7      | 1.30 0.231   |  |
| 0.125                        | 1    | 1/09/08      | 10:00 | 0.054                             | 1.14 | 8      | 1.10 0.091   |  |
| Computed Peaks               |      |              |       | 0.112                             | 4.71 |        | 50.00 0.980  |  |

Flow Frequency Analysis  
Time Series File:dsout.tsf  
Project Location:Sea-Tac



---Annual Peak Flow Rates---

| Flow Rate<br>(CFS) | Rank | Time of Peak   |
|--------------------|------|----------------|
| 0.103              | 5    | 2/09/01 4:00   |
| 0.076              | 7    | 1/05/02 16:00  |
| 0.110              | 4    | 2/27/03 8:00   |
| 0.075              | 8    | 8/26/04 2:00   |
| 0.100              | 6    | 10/28/04 17:00 |
| 0.116              | 2    | 1/18/06 16:00  |
| 0.112              | 3    | 11/24/06 4:00  |
| 0.176              | 1    | 1/09/08 9:00   |

Computed Peaks

-----Flow Frequency Analysis-----

| - - Peaks - - | Rank | Return<br>Period | Prob  |
|---------------|------|------------------|-------|
| 0.176         | 1    | 100.00           | 0.990 |
| 0.116         | 2    | 25.00            | 0.960 |
| 0.112         | 3    | 10.00            | 0.900 |
| 0.110         | 4    | 5.00             | 0.800 |
| 0.103         | 5    | 3.00             | 0.667 |
| 0.100         | 6    | 2.00             | 0.500 |
| 0.076         | 7    | 1.30             | 0.231 |
| 0.075         | 8    | 1.10             | 0.091 |
| 0.156         |      | 50.00            | 0.980 |

REDONDO REACH  
 FIRST TANK OUTPUT -  
 INPUT TO SECOND TANK

rdout.pks

Flow Frequency Analysis  
 Time Series File:rdout.tsf  
 Project Location:Sea-Tac

---Annual Peak Flow Rates---  
 Flow Rate Rank Time of Peak  
 (CFS)  
 0.077 5 2/09/01 5:00  
 0.056 7 1/05/02 17:00  
 0.080 4 2/27/03 9:00  
 0.054 8 8/26/04 3:00  
 0.070 6 10/28/04 19:00  
 0.085 2 1/18/06 17:00  
 0.082 3 11/24/06 5:00  
 0.125 1 1/09/08 10:00  
 Computed Peaks

-----Flow Frequency Analysis-----  
 - - Peaks - - Rank Return Prob  
 (CFS) (ft) Period  
 0.125 5.93 1 100.00 0.990  
 0.085 2.71 2 25.00 0.960  
 0.082 2.57 3 10.00 0.900  
 0.080 2.43 4 5.00 0.800  
 0.077 2.23 5 3.00 0.667  
 0.070 1.90 6 2.00 0.500  
 0.056 1.18 7 1.30 0.231  
 0.054 1.14 8 1.10 0.091  
 0.112 4.71 50.00 0.980

# REDONDO REACH SECOND TANK

## Retention/Detention Facility

Type of Facility: Detention Tank  
 Tank Diameter: 7.00 ft  
 Tank Length: 66.00 ft  
 Effective Storage Depth: 7.00 ft  
 Stage 0 Elevation: 100.00 ft  
 Storage Volume: 2540. cu. ft  
 Riser Head: 7.00 ft  
 Riser Diameter: 12.00 inches  
 Number of orifices: 1

| Orifice # | Height<br>(ft) | Diameter<br>(in) | Full Head<br>Discharge<br>(CFS) | Pipe<br>Diameter<br>(in) |
|-----------|----------------|------------------|---------------------------------|--------------------------|
| 1         | 0.00           | 1.38             | 0.136                           |                          |

Top Notch Weir: None  
 Outflow Rating Curve: None

| Stage<br>(ft) | Elevation<br>(ft) | Storage<br>(cu. ft) | (ac-ft) | Discharge<br>(cfs) | Percolation<br>(cfs) |
|---------------|-------------------|---------------------|---------|--------------------|----------------------|
| 0.00          | 100.00            | 0.                  | 0.000   | 0.000              | 0.00                 |
| 0.01          | 100.01            | 0.                  | 0.000   | 0.006              | 0.00                 |
| 0.03          | 100.03            | 1.                  | 0.000   | 0.009              | 0.00                 |
| 0.04          | 100.04            | 2.                  | 0.000   | 0.011              | 0.00                 |
| 0.06          | 100.06            | 3.                  | 0.000   | 0.012              | 0.00                 |
| 0.07          | 100.07            | 4.                  | 0.000   | 0.014              | 0.00                 |
| 0.09          | 100.09            | 6.                  | 0.000   | 0.015              | 0.00                 |
| 0.10          | 100.10            | 7.                  | 0.000   | 0.016              | 0.00                 |
| 0.11          | 100.11            | 9.                  | 0.000   | 0.017              | 0.00                 |
| 0.13          | 100.13            | 11.                 | 0.000   | 0.018              | 0.00                 |
| 0.23          | 100.23            | 25.                 | 0.001   | 0.025              | 0.00                 |
| 0.34          | 100.34            | 46.                 | 0.001   | 0.030              | 0.00                 |
| 0.44          | 100.44            | 67.                 | 0.002   | 0.034              | 0.00                 |
| 0.55          | 100.55            | 93.                 | 0.002   | 0.038              | 0.00                 |
| 0.65          | 100.65            | 119.                | 0.003   | 0.041              | 0.00                 |
| 0.76          | 100.76            | 149.                | 0.003   | 0.045              | 0.00                 |
| 0.86          | 100.86            | 179.                | 0.004   | 0.048              | 0.00                 |
| 0.96          | 100.96            | 210.                | 0.005   | 0.050              | 0.00                 |
| 1.07          | 101.07            | 246.                | 0.006   | 0.053              | 0.00                 |
| 1.17          | 101.17            | 279.                | 0.006   | 0.056              | 0.00                 |
| 1.28          | 101.28            | 318.                | 0.007   | 0.058              | 0.00                 |
| 1.38          | 101.38            | 354.                | 0.008   | 0.060              | 0.00                 |
| 1.49          | 101.49            | 395.                | 0.009   | 0.063              | 0.00                 |
| 1.59          | 101.59            | 434.                | 0.010   | 0.065              | 0.00                 |
| 1.70          | 101.70            | 477.                | 0.011   | 0.067              | 0.00                 |
| 1.80          | 101.80            | 517.                | 0.012   | 0.069              | 0.00                 |
| 1.91          | 101.91            | 562.                | 0.013   | 0.071              | 0.00                 |
| 2.01          | 102.01            | 603.                | 0.014   | 0.073              | 0.00                 |
| 2.11          | 102.11            | 645.                | 0.015   | 0.075              | 0.00                 |
| 2.22          | 102.22            | 692.                | 0.016   | 0.076              | 0.00                 |
| 2.32          | 102.32            | 735.                | 0.017   | 0.078              | 0.00                 |
| 2.43          | 102.43            | 784.                | 0.018   | 0.080              | 0.00                 |
| 2.53          | 102.53            | 828.                | 0.019   | 0.082              | 0.00                 |
| 2.64          | 102.64            | 877.                | 0.020   | 0.083              | 0.00                 |



|      |        |       |       |       |      |
|------|--------|-------|-------|-------|------|
| 2.74 | 102.74 | 922.  | 0.021 | 0.085 | 0.00 |
| 2.85 | 102.85 | 971.  | 0.022 | 0.087 | 0.00 |
| 2.95 | 102.95 | 1017. | 0.023 | 0.088 | 0.00 |
| 3.05 | 103.05 | 1063. | 0.024 | 0.090 | 0.00 |
| 3.16 | 103.16 | 1113. | 0.026 | 0.091 | 0.00 |
| 3.26 | 103.26 | 1159. | 0.027 | 0.093 | 0.00 |
| 3.37 | 103.37 | 1210. | 0.028 | 0.094 | 0.00 |
| 3.47 | 103.47 | 1256. | 0.029 | 0.096 | 0.00 |
| 3.58 | 103.58 | 1307. | 0.030 | 0.097 | 0.00 |
| 3.68 | 103.68 | 1353. | 0.031 | 0.098 | 0.00 |
| 3.79 | 103.79 | 1404. | 0.032 | 0.100 | 0.00 |
| 3.89 | 103.89 | 1450. | 0.033 | 0.101 | 0.00 |
| 3.99 | 103.99 | 1496. | 0.034 | 0.102 | 0.00 |
| 4.10 | 104.10 | 1546. | 0.035 | 0.104 | 0.00 |
| 4.20 | 104.20 | 1591. | 0.037 | 0.105 | 0.00 |
| 4.31 | 104.31 | 1641. | 0.038 | 0.106 | 0.00 |
| 4.41 | 104.41 | 1686. | 0.039 | 0.108 | 0.00 |
| 4.52 | 104.52 | 1735. | 0.040 | 0.109 | 0.00 |
| 4.62 | 104.62 | 1779. | 0.041 | 0.110 | 0.00 |
| 4.73 | 104.73 | 1826. | 0.042 | 0.111 | 0.00 |
| 4.83 | 104.83 | 1869. | 0.043 | 0.113 | 0.00 |
| 4.93 | 104.93 | 1912. | 0.044 | 0.114 | 0.00 |
| 5.04 | 105.04 | 1958. | 0.045 | 0.115 | 0.00 |
| 5.14 | 105.14 | 1999. | 0.046 | 0.116 | 0.00 |
| 5.25 | 105.25 | 2043. | 0.047 | 0.117 | 0.00 |
| 5.35 | 105.35 | 2083. | 0.048 | 0.119 | 0.00 |
| 5.46 | 105.46 | 2126. | 0.049 | 0.120 | 0.00 |
| 5.56 | 105.56 | 2164. | 0.050 | 0.121 | 0.00 |
| 5.67 | 105.67 | 2204. | 0.051 | 0.122 | 0.00 |
| 5.77 | 105.77 | 2240. | 0.051 | 0.123 | 0.00 |
| 5.88 | 105.88 | 2278. | 0.052 | 0.124 | 0.00 |
| 5.98 | 105.98 | 2311. | 0.053 | 0.125 | 0.00 |
| 6.08 | 106.08 | 2343. | 0.054 | 0.126 | 0.00 |
| 6.19 | 106.19 | 2376. | 0.055 | 0.128 | 0.00 |
| 6.29 | 106.29 | 2405. | 0.055 | 0.129 | 0.00 |
| 6.40 | 106.40 | 2435. | 0.056 | 0.130 | 0.00 |
| 6.50 | 106.50 | 2459. | 0.056 | 0.131 | 0.00 |
| 6.61 | 106.61 | 2484. | 0.057 | 0.132 | 0.00 |
| 6.71 | 106.71 | 2504. | 0.057 | 0.133 | 0.00 |
| 6.82 | 106.82 | 2522. | 0.058 | 0.134 | 0.00 |
| 6.92 | 106.92 | 2535. | 0.058 | 0.135 | 0.00 |
| 7.00 | 107.00 | 2540. | 0.058 | 0.136 | 0.00 |
| 7.10 | 107.10 | 2540. | 0.058 | 0.445 | 0.00 |
| 7.20 | 107.20 | 2540. | 0.058 | 1.010 | 0.00 |
| 7.30 | 107.30 | 2540. | 0.058 | 1.740 | 0.00 |
| 7.40 | 107.40 | 2540. | 0.058 | 2.530 | 0.00 |
| 7.50 | 107.50 | 2540. | 0.058 | 2.810 | 0.00 |
| 7.60 | 107.60 | 2540. | 0.058 | 3.070 | 0.00 |
| 7.70 | 107.70 | 2540. | 0.058 | 3.310 | 0.00 |
| 7.80 | 107.80 | 2540. | 0.058 | 3.530 | 0.00 |
| 7.90 | 107.90 | 2540. | 0.058 | 3.730 | 0.00 |
| 8.00 | 108.00 | 2540. | 0.058 | 3.930 | 0.00 |
| 8.10 | 108.10 | 2540. | 0.058 | 4.110 | 0.00 |
| 8.20 | 108.20 | 2540. | 0.058 | 4.290 | 0.00 |
| 8.30 | 108.30 | 2540. | 0.058 | 4.460 | 0.00 |
| 8.40 | 108.40 | 2540. | 0.058 | 4.620 | 0.00 |
| 8.50 | 108.50 | 2540. | 0.058 | 4.780 | 0.00 |

|      |        |       |       |       |      |
|------|--------|-------|-------|-------|------|
| 8.60 | 108.60 | 2540. | 0.058 | 4.930 | 0.00 |
| 8.70 | 108.70 | 2540. | 0.058 | 5.080 | 0.00 |
| 8.80 | 108.80 | 2540. | 0.058 | 5.230 | 0.00 |
| 8.90 | 108.90 | 2540. | 0.058 | 5.370 | 0.00 |

| Hyd | Inflow | Outflow |      | Peak  |        | Storage |         |
|-----|--------|---------|------|-------|--------|---------|---------|
|     |        | Target  | Calc | Stage | Elev   | (Cu-Ft) | (Ac-Ft) |
| 1   | 0.18   | *****   | 0.11 | 4.74  | 104.74 | 1829.   | 0.042   |
| 2   | 0.12   | *****   | 0.09 | 3.28  | 103.28 | 1167.   | 0.027   |
| 3   | 0.11   | *****   | 0.09 | 2.92  | 102.92 | 1004.   | 0.023   |
| 4   | 0.11   | *****   | 0.08 | 2.52  | 102.52 | 823.    | 0.019   |
| 5   | 0.10   | *****   | 0.09 | 2.87  | 102.87 | 982.    | 0.023   |
| 6   | 0.10   | *****   | 0.07 | 1.96  | 101.96 | 583.    | 0.013   |
| 7   | 0.08   | *****   | 0.06 | 1.28  | 101.28 | 318.    | 0.007   |
| 8   | 0.08   | *****   | 0.06 | 1.28  | 101.28 | 317.    | 0.007   |

-----  
Route Time Series through Facility  
Inflow Time Series File:dsout.tsf  
Outflow Time Series File:rdout2

#### Inflow/Outflow Analysis

Peak Inflow Discharge: 0.176 CFS at 9:00 on Jan 9 in Year 8  
Peak Outflow Discharge: 0.111 CFS at 13:00 on Jan 9 in Year 8  
Peak Reservoir Stage: 4.74 Ft  
Peak Reservoir Elev: 104.74 Ft  
Peak Reservoir Storage: 1829. Cu-Ft  
: 0.042 Ac-Ft

#### Flow Frequency Analysis

Time Series File:rdout2.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       | -----Flow Frequency Analysis----- |      |        |        |  |
|------------------------------|------|--------------|-------|-----------------------------------|------|--------|--------|--|
| Flow Rate                    | Rank | Time of Peak |       | - - Peaks - -                     | Rank | Return | Prob   |  |
| (CFS)                        |      |              |       | (CFS)                             | (ft) | Period |        |  |
| 0.087                        | 4    | 2/09/01      | 19:00 | 0.111                             | 4.73 | 1      | 100.00 |  |
| 0.058                        | 8    | 1/05/02      | 18:00 | 0.093                             | 3.26 | 2      | 25.00  |  |
| 0.082                        | 5    | 2/27/03      | 11:00 | 0.088                             | 2.91 | 3      | 10.00  |  |
| 0.058                        | 7    | 8/23/04      | 21:00 | 0.087                             | 2.87 | 4      | 5.00   |  |
| 0.072                        | 6    | 10/28/04     | 20:00 | 0.082                             | 2.52 | 5      | 3.00   |  |
| 0.093                        | 2    | 1/18/06      | 22:00 | 0.072                             | 1.96 | 6      | 2.00   |  |
| 0.088                        | 3    | 11/24/06     | 7:00  | 0.058                             | 1.28 | 7      | 1.30   |  |
| 0.111                        | 1    | 1/09/08      | 13:00 | 0.058                             | 1.27 | 8      | 1.10   |  |
| Computed Peaks               |      |              |       | 0.105                             | 4.20 |        | 50.00  |  |
|                              |      |              |       |                                   |      |        | 0.980  |  |

#### Flow Duration from Time Series File:rdout2.tsf

| Cutoff | Count | Frequency | CDF    | Exceedence_Probability |           |
|--------|-------|-----------|--------|------------------------|-----------|
| CFS    |       | %         | %      | %                      |           |
| 0.001  | 49010 | 79.925    | 79.925 | 20.075                 | 0.201E+00 |
| 0.004  | 4962  | 8.092     | 88.017 | 11.983                 | 0.120E+00 |
| 0.006  | 1884  | 3.072     | 91.089 | 8.911                  | 0.891E-01 |
| 0.009  | 1120  | 1.826     | 92.916 | 7.084                  | 0.708E-01 |
| 0.012  | 791   | 1.290     | 94.206 | 5.794                  | 0.579E-01 |
| 0.014  | 511   | 0.833     | 95.039 | 4.961                  | 0.496E-01 |
| 0.017  | 442   | 0.721     | 95.760 | 4.240                  | 0.424E-01 |
| 0.019  | 445   | 0.726     | 96.486 | 3.514                  | 0.351E-01 |

|       |     |       |        |       |           |
|-------|-----|-------|--------|-------|-----------|
| 0.022 | 288 | 0.470 | 96.955 | 3.045 | 0.304E-01 |
| 0.025 | 228 | 0.372 | 97.327 | 2.673 | 0.267E-01 |
| 0.027 | 269 | 0.439 | 97.766 | 2.234 | 0.223E-01 |
| 0.030 | 189 | 0.308 | 98.074 | 1.926 | 0.193E-01 |
| 0.032 | 201 | 0.328 | 98.402 | 1.598 | 0.160E-01 |
| 0.035 | 152 | 0.248 | 98.650 | 1.350 | 0.135E-01 |
| 0.038 | 127 | 0.207 | 98.857 | 1.143 | 0.114E-01 |
| 0.040 | 118 | 0.192 | 99.049 | 0.951 | 0.951E-02 |
| 0.043 | 77  | 0.126 | 99.175 | 0.825 | 0.825E-02 |
| 0.045 | 54  | 0.088 | 99.263 | 0.737 | 0.737E-02 |
| 0.048 | 77  | 0.126 | 99.388 | 0.612 | 0.612E-02 |
| 0.051 | 68  | 0.111 | 99.499 | 0.501 | 0.501E-02 |
| 0.053 | 50  | 0.082 | 99.581 | 0.419 | 0.419E-02 |
| 0.056 | 35  | 0.057 | 99.638 | 0.362 | 0.362E-02 |
| 0.058 | 58  | 0.095 | 99.733 | 0.267 | 0.267E-02 |
| 0.061 | 24  | 0.039 | 99.772 | 0.228 | 0.228E-02 |
| 0.063 | 14  | 0.023 | 99.795 | 0.205 | 0.205E-02 |
| 0.066 | 23  | 0.038 | 99.832 | 0.168 | 0.168E-02 |
| 0.069 | 19  | 0.031 | 99.863 | 0.137 | 0.137E-02 |
| 0.071 | 18  | 0.029 | 99.892 | 0.108 | 0.108E-02 |
| 0.074 | 14  | 0.023 | 99.915 | 0.085 | 0.848E-03 |
| 0.076 | 9   | 0.015 | 99.930 | 0.070 | 0.701E-03 |
| 0.079 | 2   | 0.003 | 99.933 | 0.067 | 0.669E-03 |
| 0.082 | 8   | 0.013 | 99.946 | 0.054 | 0.538E-03 |
| 0.084 | 14  | 0.023 | 99.969 | 0.031 | 0.310E-03 |
| 0.087 | 7   | 0.011 | 99.980 | 0.020 | 0.196E-03 |
| 0.089 | 7   | 0.011 | 99.992 | 0.008 | 0.815E-04 |
| 0.092 | 2   | 0.003 | 99.995 | 0.005 | 0.489E-04 |



REDONDO REACH  
SECOND RANK OUTPUT

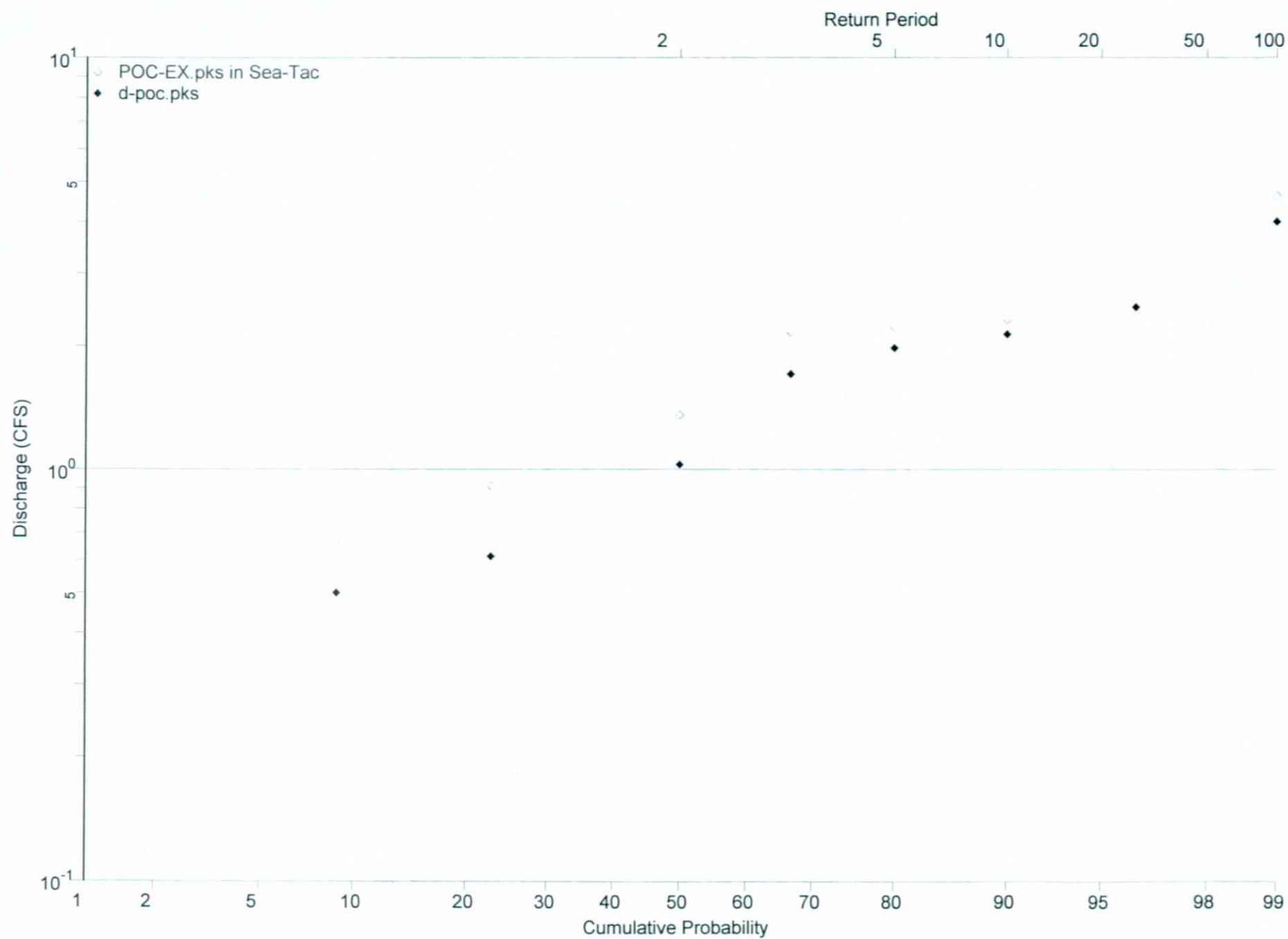
rdout2.pks

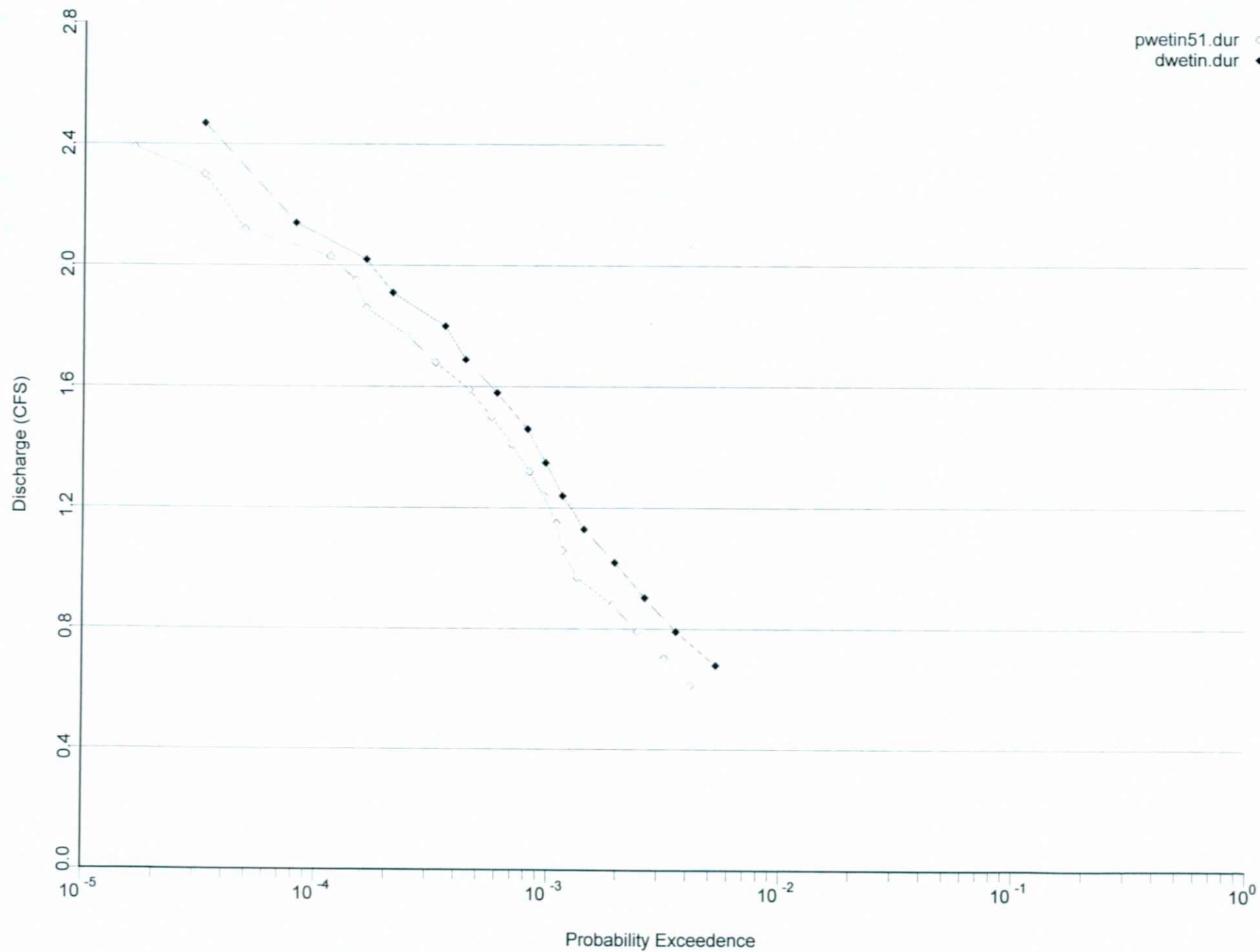
Flow Frequency Analysis  
Time Series File:rdout2.tsf  
Project Location:Sea-Tac

| ---Annual Peak Flow Rates--- |      |              |       |
|------------------------------|------|--------------|-------|
| Flow Rate<br>(CFS)           | Rank | Time of Peak |       |
| 0.087                        | 4    | 2/09/01      | 19:00 |
| 0.058                        | 8    | 1/05/02      | 18:00 |
| 0.082                        | 5    | 2/27/03      | 11:00 |
| 0.058                        | 7    | 8/23/04      | 21:00 |
| 0.072                        | 6    | 10/28/04     | 20:00 |
| 0.093                        | 2    | 1/18/06      | 22:00 |
| 0.088                        | 3    | 11/24/06     | 7:00  |
| 0.111                        | 1    | 1/09/08      | 13:00 |

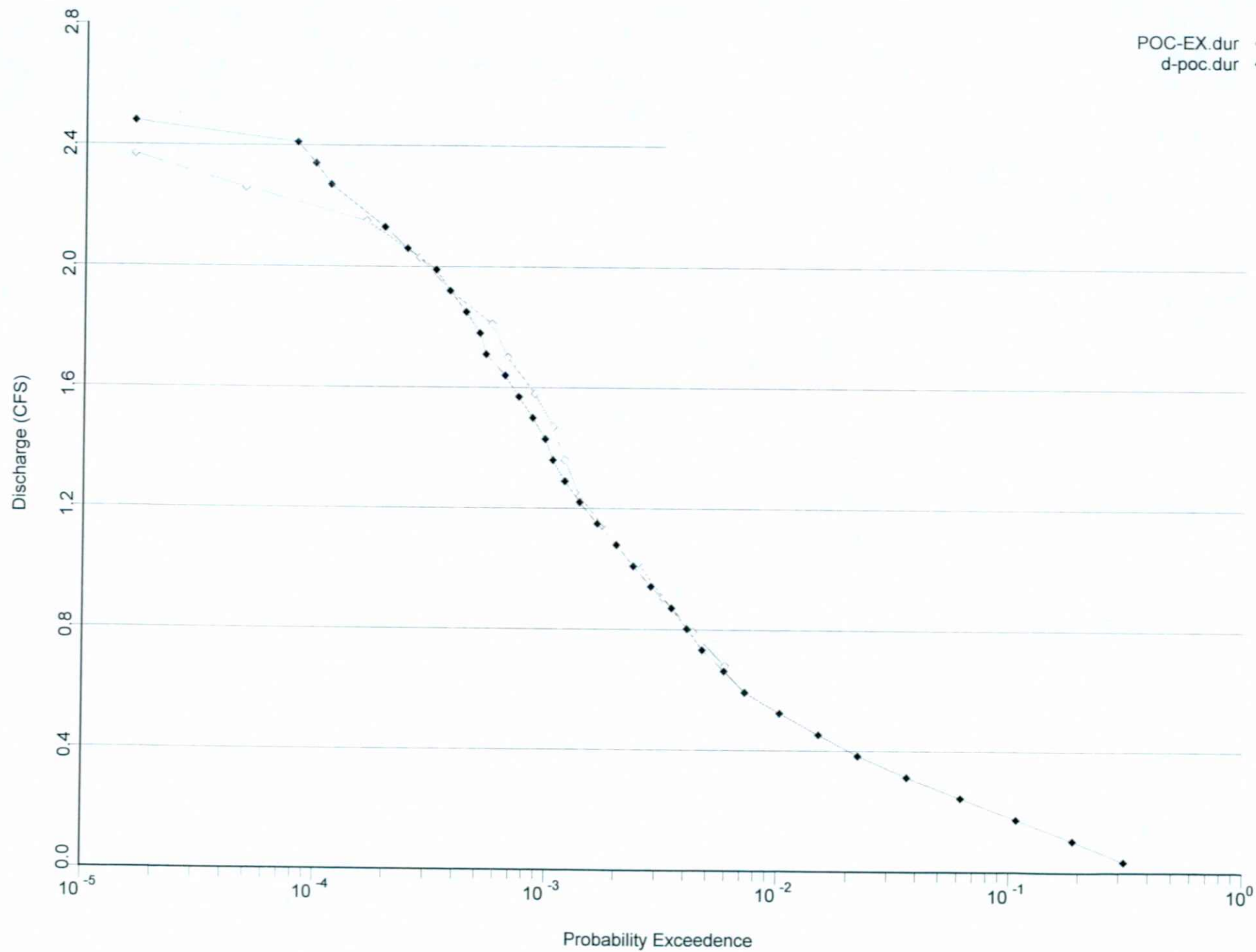
Computed Peaks

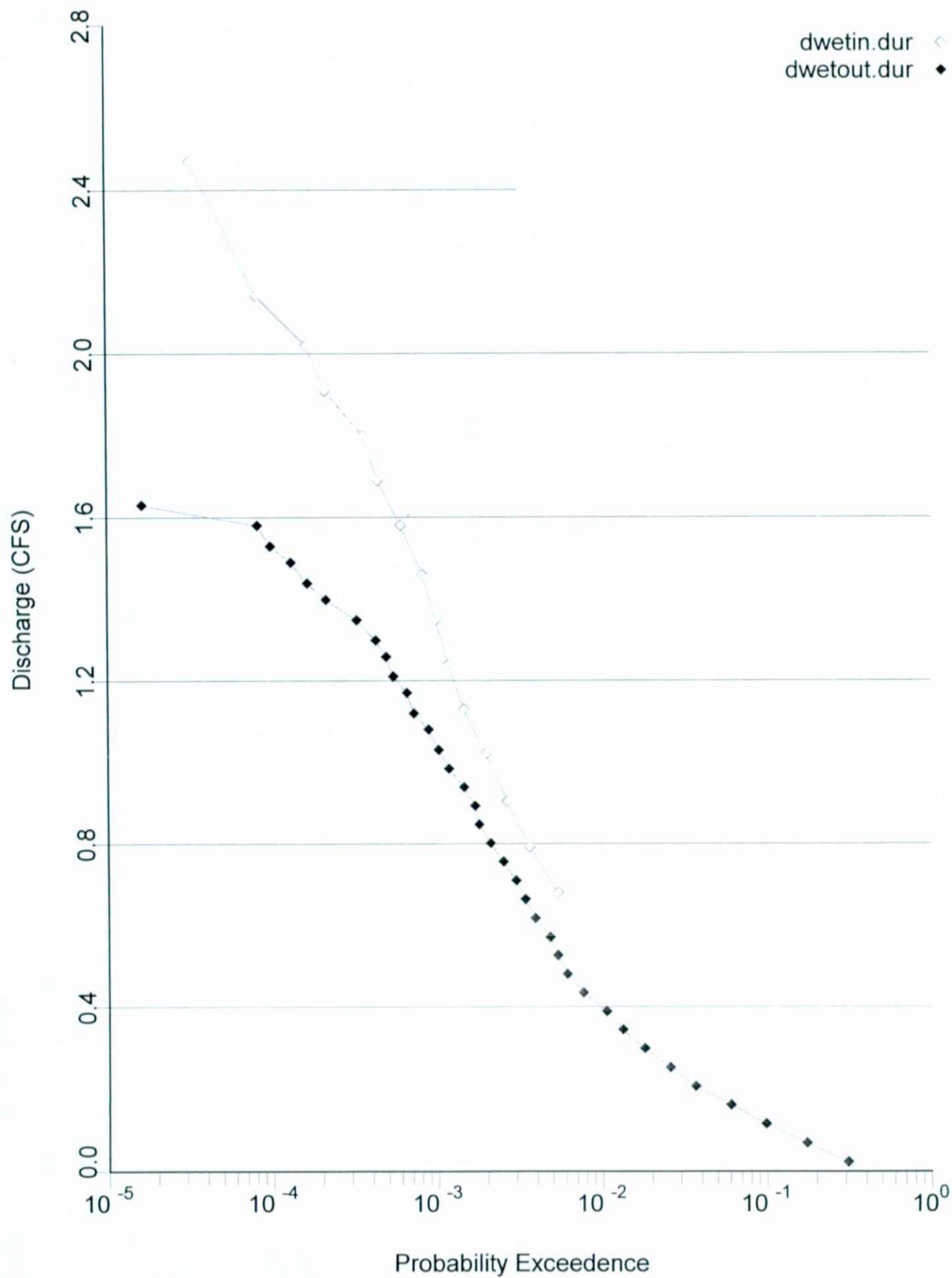
| -----Flow Frequency Analysis----- |      |                  |       |  |
|-----------------------------------|------|------------------|-------|--|
| Peaks<br>(CFS)                    | Rank | Return<br>Period | Prob  |  |
| 0.111                             | 1    | 100.00           | 0.990 |  |
| 0.093                             | 2    | 25.00            | 0.960 |  |
| 0.088                             | 3    | 10.00            | 0.900 |  |
| 0.087                             | 4    | 5.00             | 0.800 |  |
| 0.082                             | 5    | 3.00             | 0.667 |  |
| 0.072                             | 6    | 2.00             | 0.500 |  |
| 0.058                             | 7    | 1.30             | 0.231 |  |
| 0.058                             | 8    | 1.10             | 0.091 |  |
| 0.105                             |      | 50.00            | 0.980 |  |











**12", N12 PIPE @ 0.50%**  
**Worksheet for Circular Channel**

| Project Description |               |
|---------------------|---------------|
| Worksheet           | Circular Chan |
| Flow Element        | Circular Chan |
| Method              | Manning's Fo  |
| Solve For           | Discharge     |

| Input Data         |              |
|--------------------|--------------|
| Mannings Co: 0.012 |              |
| Slope              | 0.5000 ft/ft |
| Depth              | 1.00 ft      |
| Diameter           | 12 in        |

| Results       |               |
|---------------|---------------|
| Discharge     | 2.64 cfs      |
| Flow Area     | 0.8 ft²       |
| Wetted Peri   | 3.14 ft       |
| Top Width     | 2.98e-8 ft    |
| Critical Dep  | 0.70 ft       |
| Percent Ful   | 100.0 %       |
| Critical Slop | 0.07229 ft/ft |
| Velocity      | 3.36 ft/s     |
| Velocity He   | 0.18 ft       |
| Specific En   | 1.18 ft       |
| Froude Nun    | 1.15e-4       |
| Maximum C     | 2.84 cfs      |
| Discharge F   | 2.64 cfs      |
| Slope Full    | 0.5000 ft/ft  |
| Flow Type     | bcritical     |



# EXISTING WETLAND OUTFALL

## Worksheet for Trapezoidal Channel

### Project Description

|              |                |
|--------------|----------------|
| Worksheet    | Trapezoidal Ch |
| Flow Element | Trapezoidal Ch |
| Method       | Manning's Form |
| Solve For    | Channel Depth  |

### Input Data

|               |             |
|---------------|-------------|
| Mannings Co   | 0.045       |
| Slope         | 05000 ft/ft |
| Left Side Slo | 15.00 H : V |
| Right Side Sk | 15.00 H : V |
| Bottom Width  | 42.00 ft    |
| Discharge     | 2.46 cfs    |

### Results

|              |                     |
|--------------|---------------------|
| Depth        | 0.11 ft             |
| Flow Area    | 4.7 ft <sup>2</sup> |
| Wetted Per   | 45.27 ft            |
| Top Width    | 45.26 ft            |
| Critical De  | 0.05 ft             |
| Critical Slo | 082127 ft/ft        |
| Velocity     | 0.52 ft/s           |
| Velocity He  | 4.18e-3 ft          |
| Specific En  | 0.11 ft             |
| Froude Num   | 0.28                |
| Flow Type    | bcritical           |

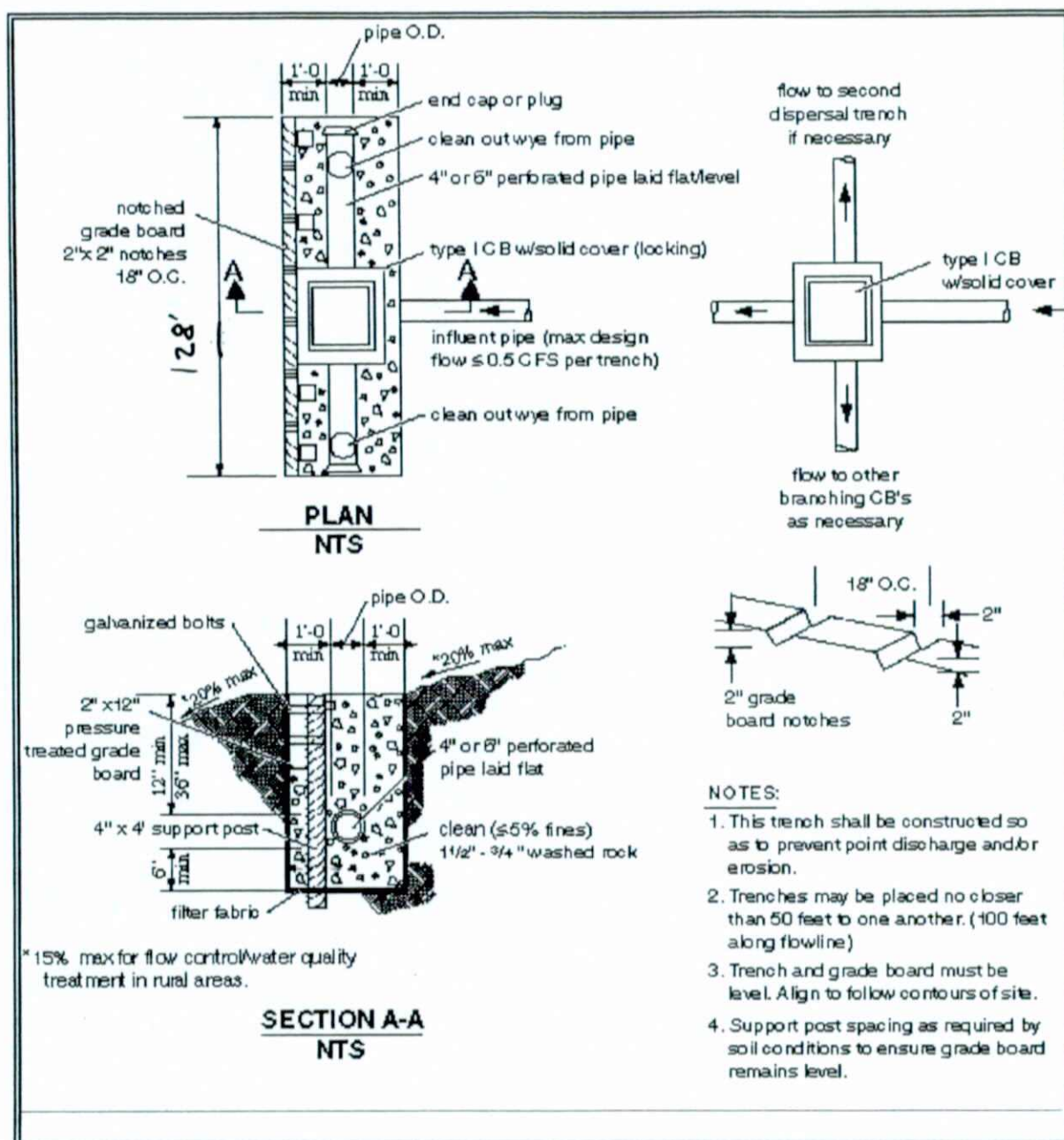


Figure 3.6 Standard Dispersion Trench with Notched Grade Board

- No erosion or flooding of downstream properties may result.
- **Runoff discharged towards landslide hazard areas must be evaluated by a geotechnical engineer or qualified geologist.** The discharge point may not be placed on or above slopes greater than 20% or above erosion hazard areas without evaluation by a geotechnical engineer or qualified geologist and DDES approval.
- For **sites with septic systems**, the discharge point must be downgradient of the drainfield primary and reserve areas. This requirement can be waived by DDES permit review staff if site topography will clearly prohibit flows from intersecting the drainfield. See Reference B for a summary of SKCDPH onsite sewage system requirements.

#### C.2.4.4 SHEET FLOW DISPERSION

**Sheet flow dispersion** is the simplest method of flow control. This BMP can be used for any impervious surface that is graded so as to avoid concentrating flows. Because flows are already dispersed as they leave the impervious surface, they need only traverse a narrow band of adjacent vegetation for effective attenuation and treatment.

**Typical Uses:** Flat or moderately sloping surfaces (< 15% slope) such as driveways, sport courts, patios, and roofs without gutters; or any situation where concentration of flows can be avoided.

#### Design Specifications

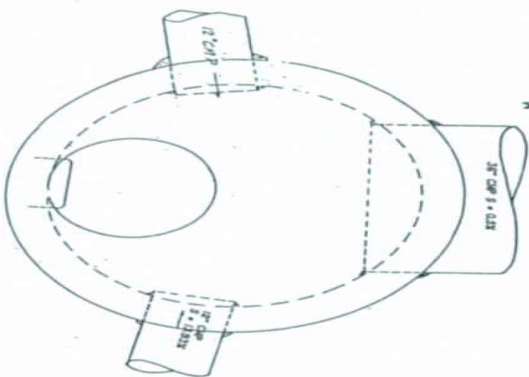
Figure C.2.H (p. C-22) and the following guidelines apply to surfaces graded to avoid concentrating runoff:

- A 2-foot-wide **transition zone** to discourage channeling should be provided between the edge of the driveway pavement and the downslope vegetation, or under building eaves. This may be an extension of subgrade material (crushed rock), modular pavement, drain rock, or other material acceptable to DDES.
- A **vegetated buffer width of 10 feet** must be provided for up to 20 feet of width of paved or impervious surface. An additional 5 feet of width must be added for each additional 20 feet of width or fraction thereof.
- No erosion or flooding of downstream properties may result.
- **Runoff discharge toward landslide hazard areas must be evaluated by a geotechnical engineer or a qualified geologist.** The discharge point may not be placed on or above slopes greater than 20% or above erosion hazard areas without evaluation by a geotechnical engineer or qualified geologist and DDES approval.
- For **sites with septic systems**, the discharge point must be downgradient of the drainfield primary and reserve areas. This requirement can be waived by DDES permit review staff if site topography will clearly prohibit flows from intersecting the drainfield. See Reference B for a summary of SKCDPH onsite sewage system requirements.

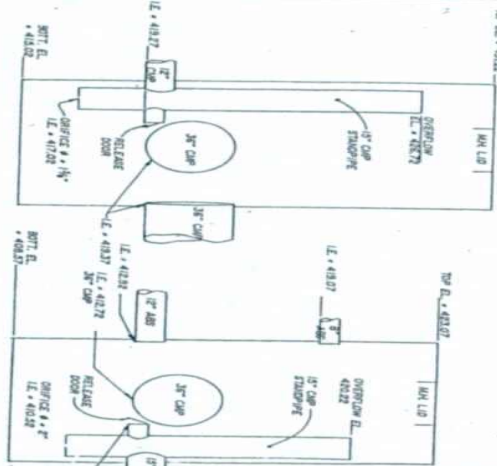


PLAN VIEW CB # 1 72"  
SCALE 3/4" = 1'

3" CAP 1" DIA



PLAN VIEW CB # 2 54"  
SCALE 3/4" = 1'



PACIFIC HWY SOUTH (HWY 99)

SECTION C-C  
DETENTION POND DETAIL  
N.T.S.

SEE DETAIL

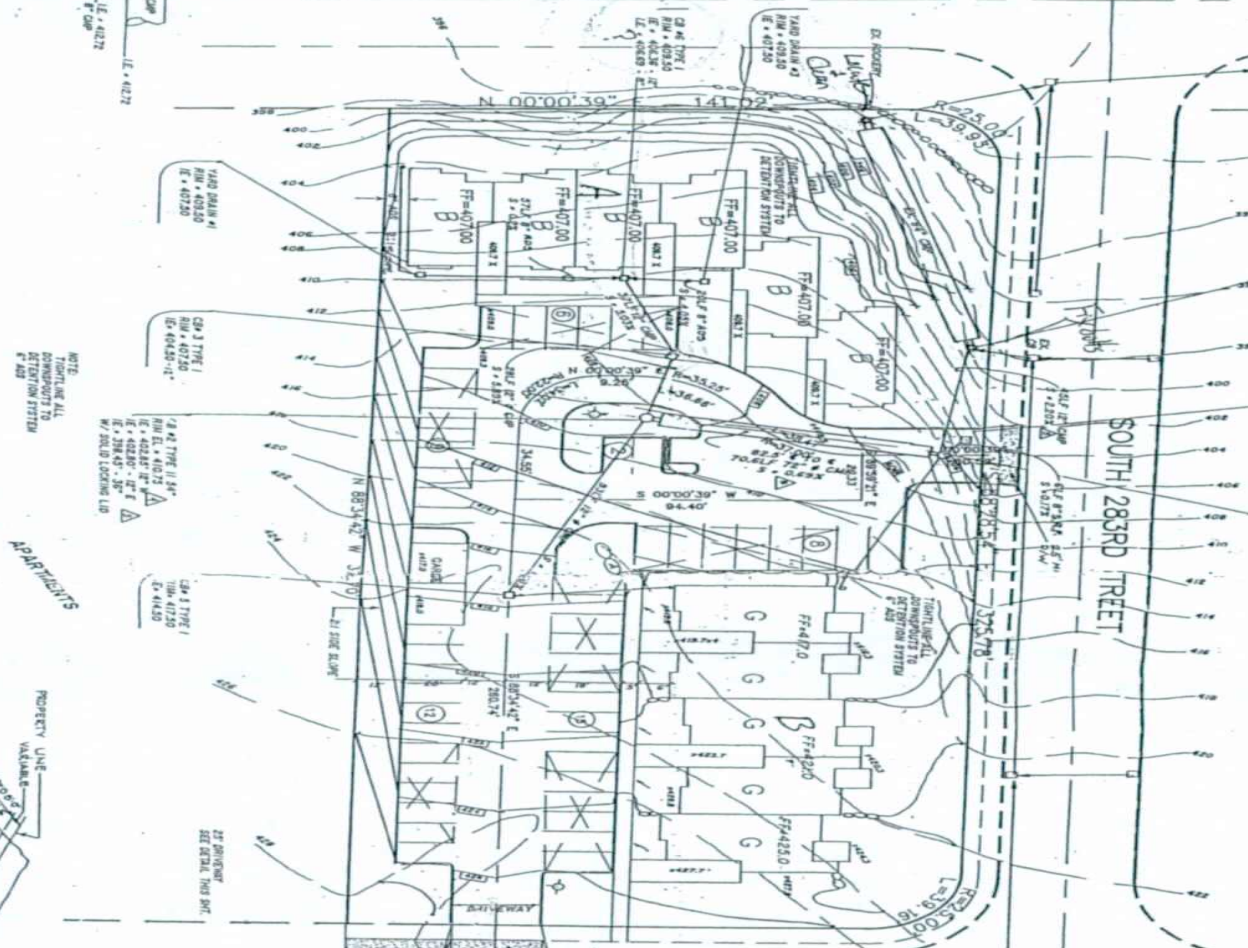
CB # 1 TYPE I  
3" CAP 1" DIA  
OVERFLOW 42.22  
ELEVATION 42.22  
ELEVATION 42.22

CB # 2 TYPE I  
3" CAP 1" DIA  
OVERFLOW 42.22  
ELEVATION 42.22  
ELEVATION 42.22

CB # 3 TYPE I  
3" CAP 1" DIA  
OVERFLOW 42.22  
ELEVATION 42.22  
ELEVATION 42.22

SOUTH 283RD STREET

18TH AVE SOUTH



CB # 7 RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

CB # 4 RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

SITE PLAN LOT 3

PLANT TYPE RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

PLANT TYPE RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

PLANT TYPE RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

PLANT TYPE RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.

PLANT TYPE RESTRICTOR 72"  
DETAIL SEE SHT. C2 OF 11  
N.T.S.



MATCH LINE (See DWG C-5)

CB #10  
CA TYPE II 54"  
RIM = 396.00  
I/E = 388.00  
OVERFLOW = 393.45  
ORIFICE = 2.42' #  
W/LOCKING LID

EXIST SAN 5 MH  
RIM = 386.33

CB #9  
CA TYPE I 54"  
RIM = 399.00  
I/E = 386.45 34"  
I/E = 390.95 12"

CB #8  
CA TYPE I  
RIM = 400.0  
I/E = 398.0

CB #7  
CA TYPE I  
RIM = 404.20  
I/E = 401.74

CB #6  
CA TYPE II MH  
RIM = 409.25  
I/E = 403.60 6"  
I/E = 403.87 12"

CB #6  
CA TYPE II MH  
RIM = 409.5  
I/E = 402.03

CB #14  
CA TYPE I  
RIM = 415.5  
I/E = 411.5

CB  
R  
I/E

CB #2  
CA TYPE I  
RIM = 420.25  
I/E = 417.57 6"  
I/E = 417.24 12"

FLOOD CONTROL DIVISION

CLEARANCE

Special Conditions ☒ 3' Below

SIGNED *H. K. H. H.* 6/1/10

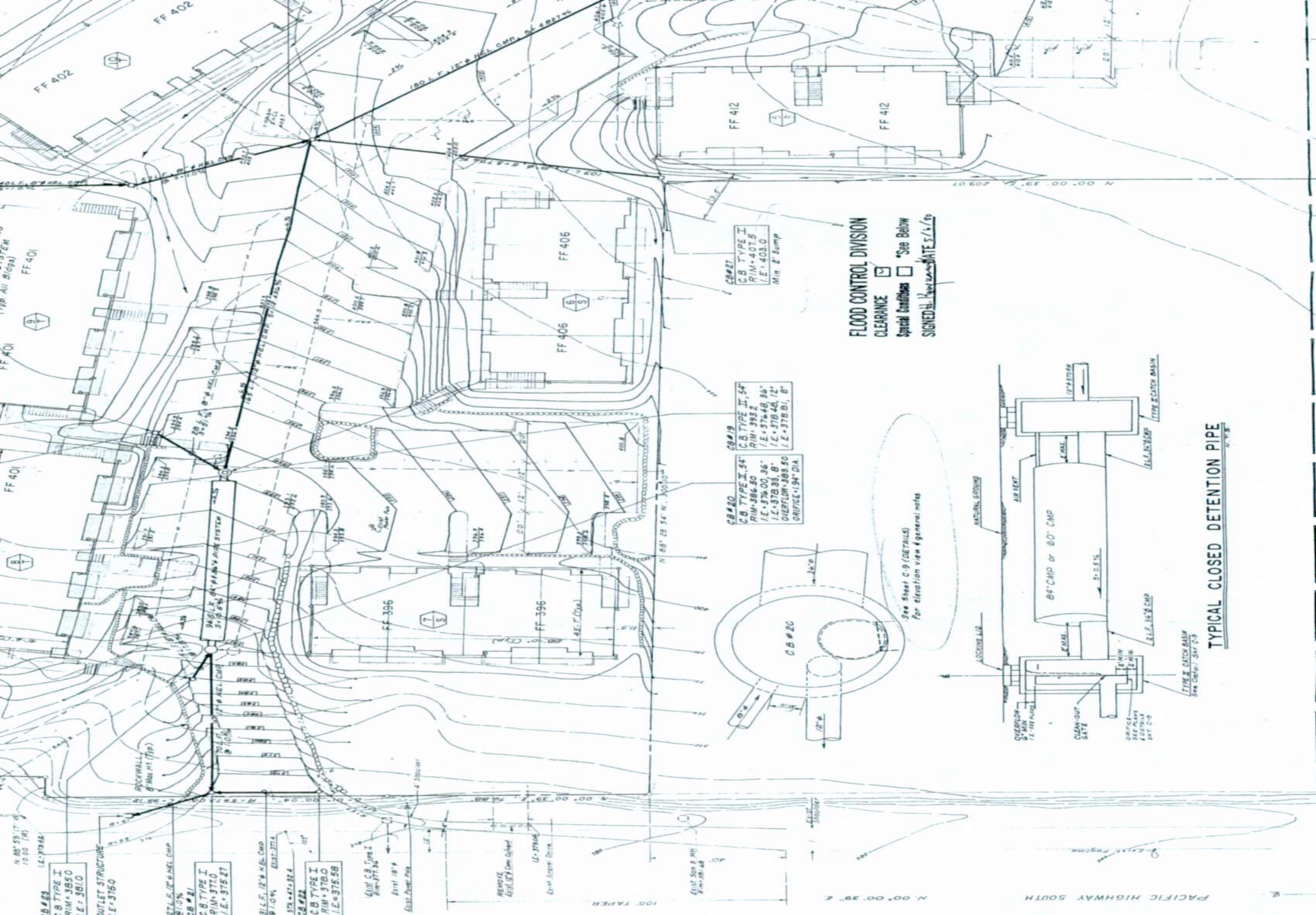
1. ALL FLOOD CONTROL DIVISION PROJECTS SHALL BE DESIGNED TO PROTECT THE PUBLIC AND THE ENVIRONMENT FROM FLOODING AND TO MAINTAIN THE INTEGRITY OF THE FLOOD CONTROL SYSTEM. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT.

2. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT.

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4. THE DESIGNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT. THE DESIGNER SHALL ALSO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR ENSURING THAT THE PROJECT COMPLETION DATE IS WITHIN THE DESIGN LIFE OF THE PROJECT.

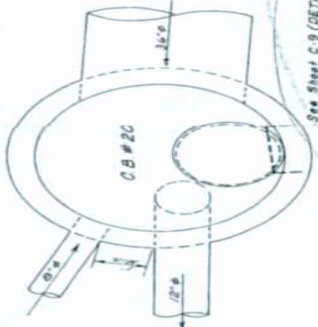




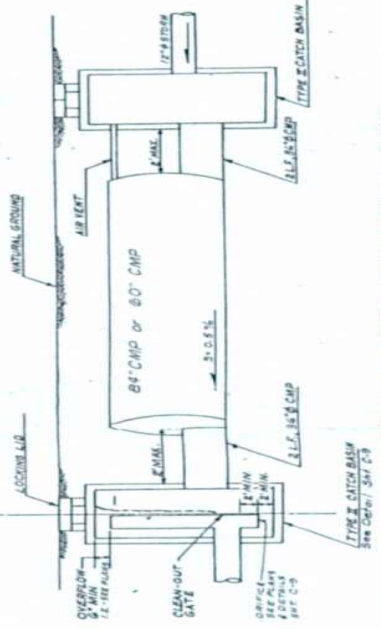
**FLOOD CONTROL DIVISION**  
 CLEARANCE ☒ ☐  
 Special Conditions ☐ \*See Below  
 SIGNED 11/1/60

**CB #20**  
 C.B. TYPE II, 54"  
 RIM 386.50  
 I.E. 376.00, 36"  
 I.E. 378.35, 8"  
 OVERFLOW 385.50  
 ORIFICE 1.94' DIA

**CB #27**  
 C.B. TYPE I  
 RIM 407.5  
 I.E. 403.0  
 Min 2' Sump



See Sheet C-9 (DETAILS)  
 For elevation view & general notes



**TYPICAL CLOSED DETENTION PIPE**  
 N.Y.C.



## APPENDIX B

PACW - CEC

# EASTSIDE CONSULTANTS, INC.

ENGINEERS-  
SURVEYORS

## LEVEL I DRAINAGE REPORT

TAVIS PROPERTY



## TAVIS LEVEL I DOWNSTREAM ANALYSIS

This site consists of 12.0 acres located in Section 33-22-04, lying west of Pacific Highway South between South 279th Street and South 282nd Place. The property is vegetated with mature evergreen and deciduous trees, brush and pasture grass.

The only structure on-site is a small shed. The property slopes generally to the west, with grades from 5 % to 40%  $\pm$ .

A review of the 1990 Sensitive Areas Map Folio showed two wetlands (Puget Sound # 50 and Puget Sound # 5) in the vicinity of the site. No other sensitive areas were shown on or near the site. None of the site is within a 100 Year Flood Plain according to the 1990 F.E.M.A. maps. This project is within the Puget Sound Sub-basin of the Puget Sound Drainage Basin. No Basin Plan has been adopted for the Puget Sound Drainage Basin yet.

The site is within the Federal Way Community Planning Area and may be subject to special requirements contained in the plan. No Critical Drainage Area requirements apply to this site.

The King County Basin Reconnaissance Summary Reports show that this site drains to collection point 18 of the Puget Sound Basin.

## UPSTREAM

The upstream basin contributing to this site consists of 0.5 acres of paved roadway (Pacific Highway South) and shoulder immediately east of the site.

## DOWNSTREAM

Runoff from the west half of the site sheet flows west and northwest to a wetland near the middle of the site. No outlet was found for the wetland area. The east 180 feet of the west half of the site drains east and southeast to the wetland near the middle of the site. Runoff from the remainder of the site sheet flows to a second wetland near the west property line. This wetland outlets to a drainage swale approximately 2' - 4' wide. This drainage is severely eroded, with little or no vegetation to stabilize the channel. The swale flows southwest to a point over 1/4 mile downstream of the project site.

A review of the S.W.M. Drainage Investigation Reports showed no complaints within a 1/4 mile downstream of the project site.



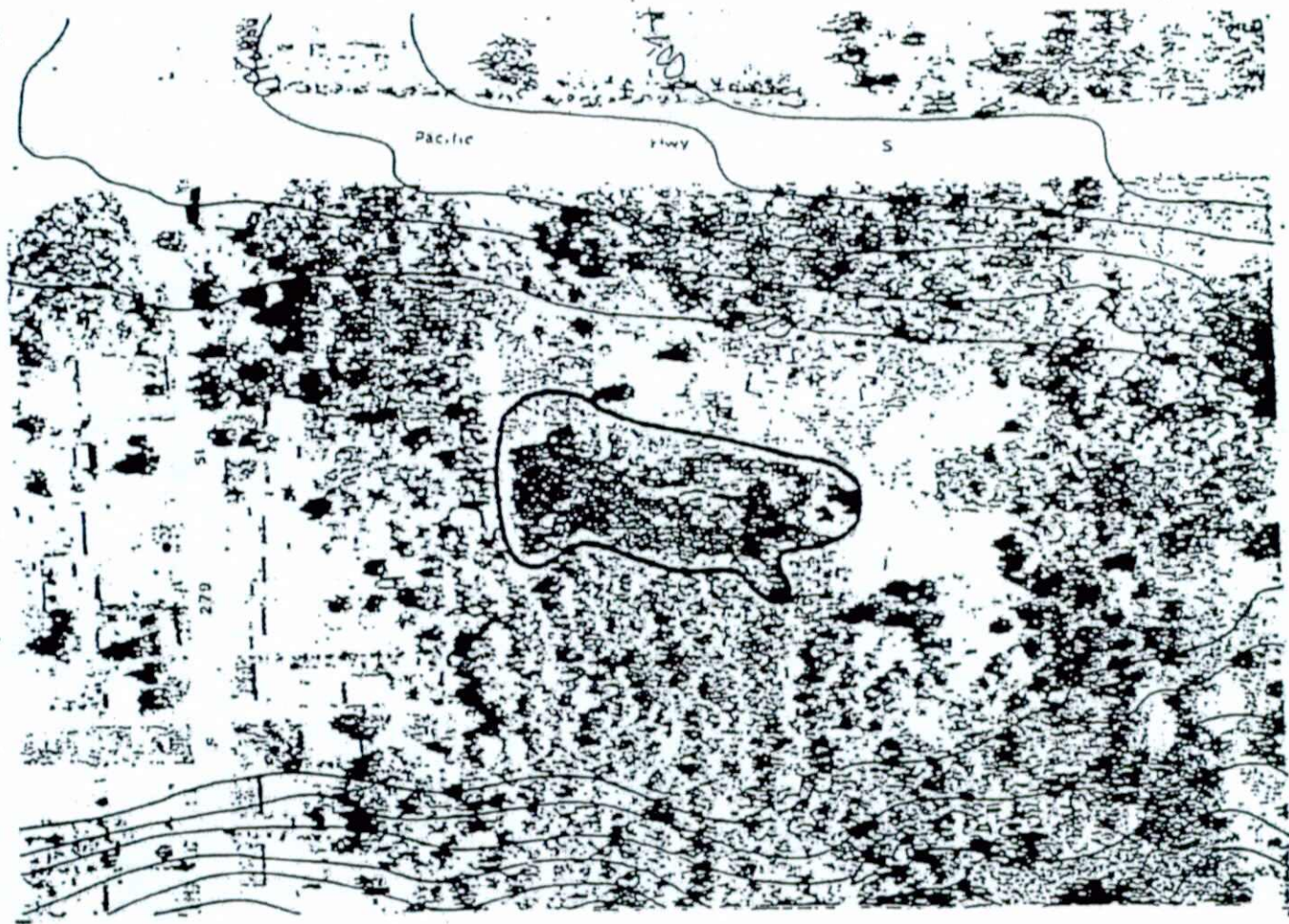


Photo Date: 05/01/80

Inventory Date: 06/10/81

N ↗

Scale: 1"=200'

WETLAND: Lower Puget Sound 5

COMMUNITY  
PLAN AREA: Federal Way

LOCATION  
(S,T,R): NE-SE 32, 22N, 4E

BASIN OR  
DRAINAGE: Puget Sound

ACREAGE: 1.3

SENSITIVE AREA MAP#: 5

| CLASSIFICATION: | Fish & Wildlife Service                                       | Common Name   |
|-----------------|---------------------------------------------------------------|---------------|
| PUB3            | Palustrine Unconsolidated<br>Bottom Mud                       | Open Water    |
| PEM3            | Palustrine Emergent Narrow-<br>leaved Nonpersistent (Cattail) | Shallow Marsh |
| PAB2            | Palustrine Aquatic Bed<br>Submergent Vascular                 | Shallow Marsh |
| PAB4            | Palustrine Aquatic Bed Floating-<br>leaved                    | Shallow Marsh |

NOTE:

Wetland boundaries shown are approximate. Further field studies are necessary to confirm the actual delineation of the wetland according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*.

OBSERVED SPECIES (refer to Appendix 1):

Trees: AR

Shrubs: SX SD

Herbs: PN IP OS RO RR TL VS

Sedges/Grasses/Ferns: JE LM

Birds: CH MA CQ VS RB

Mammals:

Fish:

Other:

HYDROLOGY:

Inlet: Type: ..  
Condition:

Outlet: Type: None.  
Condition: Not observed.

Outflow enters: None.

Water movement through wetland:

Observed water quality in wetland:

SIGNIFICANT HABITAT FEATURES:

GENERAL OBSERVATIONS: Fill dirt from adjacent grading activity; noise from jets and highway traffic; garbage; rusty cars; some lod shacks. Owner dredged peat bog over 15 years ago - created deep water area.

WETLAND RATING (see Introduction for criteria): I (b)

NOTE: Species listed are only those observed during field visits. Further field studies are necessary to obtain a complete list including rare, threatened, and/or endangered species.



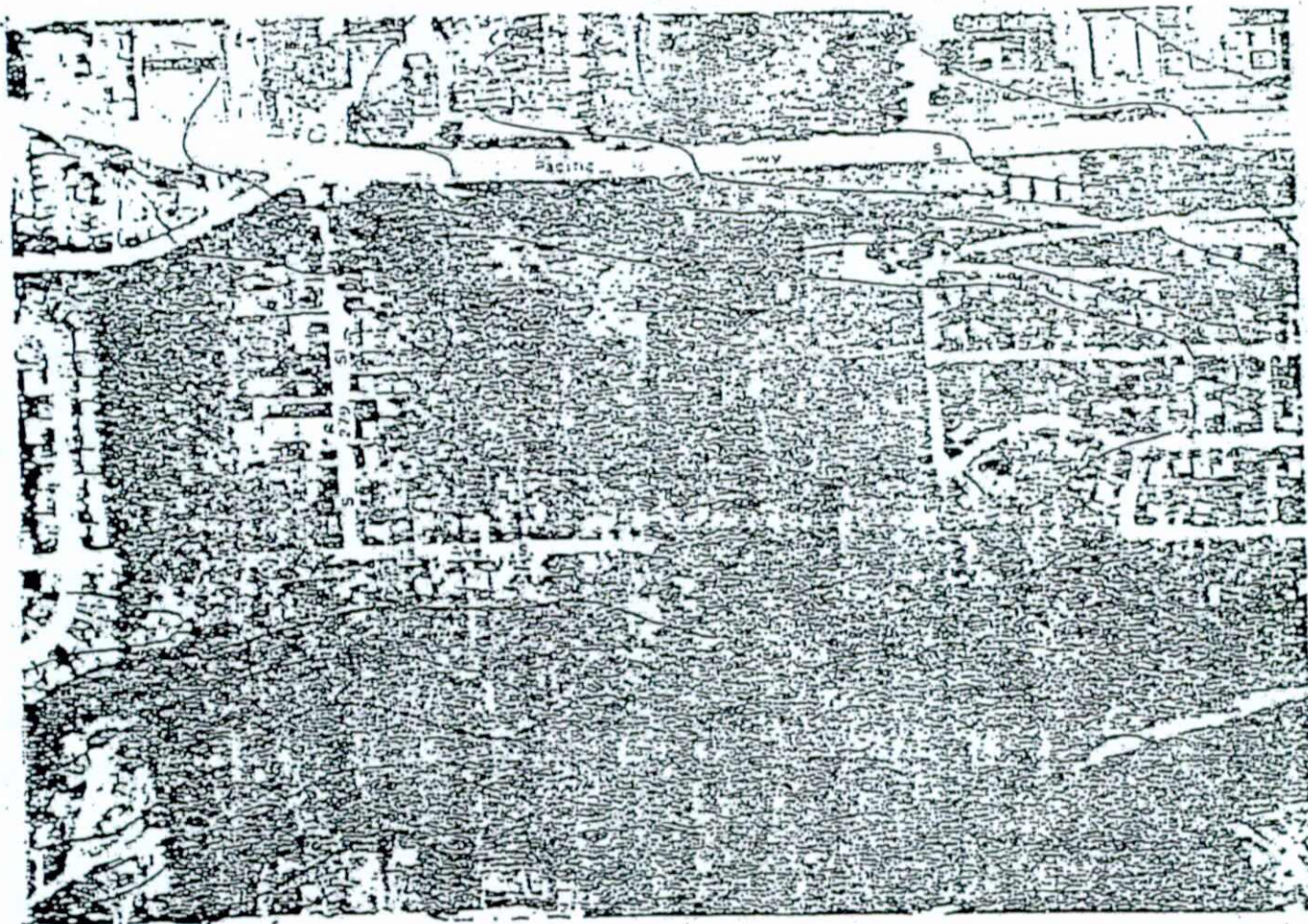


Photo Date: 05/01/80

Inventory Date: 06/10/81

N 

Scale: 1"=500'

WETLAND: Lower Puget Sound 50

COMMUNITY  
PLAN AREA: Highline

LOCATION  
(S,T,R): SE-NE 32, 22N, 4E

BASIN OR  
DRAINAGE: Puget Sound

ACREAGE: 4.3

SENSITIVE AREA MAP#: 5

CLASSIFICATION:

Fish & Wildlife Service

Common Name

PFO1

Palustrine Forested Broad-leaved  
Deciduous (Black  
Cottonwood/Alder)

Forested

PFO4

Palustrine Forested Needle-leaved  
Evergreen (Hemlock)

Forested

NOTE: Wetland boundaries shown are approximate. Further field studies are necessary to confirm the actual delineation of the wetland according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*.



OBSERVED SPECIES (refer to Appendix 1):

Trees: *AM AR PT TS TP*

Shrubs: *OC SR RT MD SX SD VP*

Herbs: *GM RR*

Sedges/Grasses/Ferns:

Birds: *MA CQ AR CO SS GF*

Mammals:

Fish:

Other:

HYDROLOGY:

Inlet:           Type:  
                  Condition:

Outlet:           Type: Open channel.  
                  Condition: Partially blocked.

Outflow enters: Stream.

Water movement through wetland: No visible movement (but water moving from outlet).

Observed water quality in wetland:

SIGNIFICANT HABITAT FEATURES: Some snags.

GENERAL OBSERVATIONS: Condos and houses around wetland; old car pieces; litter piles of dirt; noise from jets and traffic; pond is muddy from runoff. North of Applewood Plat extensively filled off-site (BALD file #78721).

WETLAND RATING (see Introduction for criteria): 2

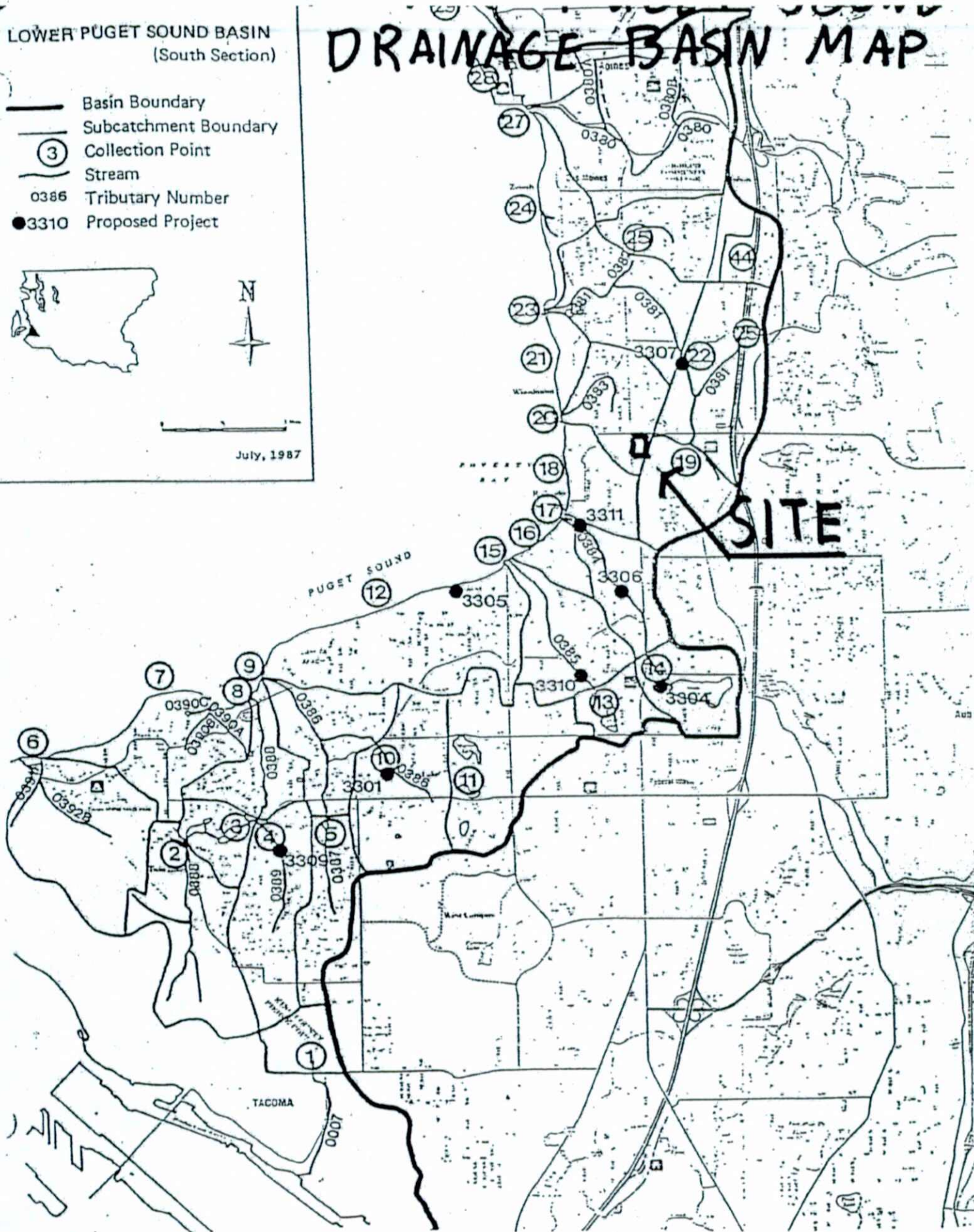
NOTE: Species listed are only those observed during field visits. Further field studies are necessary to obtain a complete list including rare, threatened, and/or endangered species.

# DRAINAGE BASIN MAP

- 



July, 1987





# VI. ENDIX C DETAILED FINDINGS AND RECOMMENDATIONS LOWER PUGET SOUND BASIN

\* All items listed here are located on final display maps in the offices of Surface Water Management, Building and Land Development, and Basin Planning.

| Item* | Trib. & River Mile Collect. | Category | Prop. Proj. | Existing Conditions and Problems                                                                                   | Anticipated Conditions and Problems                                                                                                          | Recommendations                                                                                                                                                                 |
|-------|-----------------------------|----------|-------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | 0007<br>RM 1.0              | Geology  | 1           | There is fill across swale on plateau. Home construction. Poor drainage.                                           | Runoff from uphill areas will probably cause wet soils and even minor flooding.                                                              | Control or reroute surface runoff.                                                                                                                                              |
| 2     | (coastal)                   | Geology  | 12          | Large, old landslide is apparently still active. Erosion around headscarp.                                         | Slide problem will continue and/or accelerate on this recently logged bluff.                                                                 | <ul style="list-style-type: none"> <li>- Provide adequate setbacks for development.</li> <li>- Prevent outfall of surface runoff onto slide area or adjacent bluffs.</li> </ul> |
| 3     | (slopes)                    | Geology  | 12          | Surface erosion and gullying in pasture above Adelaide.                                                            | Livestock damage to slopes underlain by loose sandy-gravelly soils, perhaps exacerbated by surface runoff from residences uphill.            | Direct road drainage away from damaged slopes.                                                                                                                                  |
| 4     | (coastal)                   | Geology  | 18          | Mapped landslide (old).                                                                                            | Already developed; no known complaints.                                                                                                      | Assure that future construction and runoff will not reactivate movement.                                                                                                        |
| 5     | (coastal)                   | Geology  | 34          | Mapped landslides. Steep headwall slopes and coastal bluffs. Surface erosion on steep slopes when soil is exposed. | Slump topography, steep slopes, and seepage suggest possibility of continuing failure. (Parts are currently being prepared for development.) | Exercise extreme caution in routing surface runoff from plateau and from roads and buildings on slopes.                                                                         |



| <u>Item</u> | <u>Trib. &amp;<br/>River Mile</u> | <u>Collect.<br/>Point</u> | <u>Category</u> | <u>Prop. Proj.</u> | <u>Existing<br/>Conditions and Problems</u>                           | <u>Anticipated<br/>Conditions and Problems</u>                                                                                                                            | <u>Recommendations</u>                                                                                                                                                                                         |
|-------------|-----------------------------------|---------------------------|-----------------|--------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6           | (coastal)                         | 36                        | Geology         |                    | Landslide on coastal bluff has moved (probably since Jan. '86 storm). | Landslide affects Indian Trail (County land) and surrounding area. Toe is unprotected from wave action. Will probably continue to move.                                   | Assure surface runoff is piped to beach or routed to more stable area in developments. May require structural reinforcement, drainage.                                                                         |
| 7           | (coastal)                         | 38                        | Geology         |                    | Recent (Jan. '86) landslides on slopes above Seahurst Park.           | More or less seasonal loss of bluff edge will continue.                                                                                                                   | <ul style="list-style-type: none"> <li>- Route surface runoff away from steeper bluffs.</li> <li>- Assess need for structural and vegetative reinforcement on slopes.</li> <li>- Revegetate slopes.</li> </ul> |
| 8           | <u>0361A</u><br>RM .60-.70        | 42                        | Geology         |                    | Landslides in stream valley.                                          | Valley side may have been oversteepened by cut for Seola Beach Dr.; roof and/or street drainage from above. There is a possibility of similar problems throughout valley. | Redirect drainage west to ravine where slope is not so steep, or tightline it to the bottom.                                                                                                                   |
| 9           | <u>0361A</u><br>RM .84-.70        | 42                        | Geology         |                    | Channel downcutting and bank erosion.                                 | Increased runoff from above is causing channels to erode (sandy & gravelly soils very susceptible). Undercutting of hillsides.                                            | Reduce runoff rate from upper drainage basin (subcatchment 43) and from flow now routed into tributary valleys to less erosive levels.                                                                         |

| Item | Trib. &<br>River Mile      | Collect.<br>Point | Category  | Prop. Proj. | Existing<br>Conditions and Problems                                                                                                                             | Anticipated<br>Conditions and Problems                                                                                                                                                                                                                                                                                                      | Recommendations                                                                                                                                                                                                                                                                                      |
|------|----------------------------|-------------------|-----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8    | 0005<br>RM 10.05           | 19                | Habitat   |             | Fish blockage due to concrete and asphalt debris piled in stream.                                                                                               | Condition will continue.                                                                                                                                                                                                                                                                                                                    | Encourage State Fisheries personnel to organize a citizen-action project to construct a stepped pool or other solution to allow fish passage.                                                                                                                                                        |
| 9    | 0005<br>RM 10.10-<br>10.30 | 19                | Habitat   |             | Native vegetation removed down to stream edge and replaced by pasture.                                                                                          | Livestock will erode streambank and defecate in stream channel. This will result in erosion, sedimentation, and water quality problems.                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- Fence to provide a stream corridor.</li> <li>- Plant native plants or allow natural revegetation along streambanks.</li> </ul>                                                                                                                              |
| 10   | 0005A<br>RM 0.2            | 19                | Hydrology | 0307        | Tributary contributes to Mill Creek, which experiences erosion and sediment transport. Wetland 0308 now provides some R/D and has much more potential capacity. | This area will continue to develop and will contribute greater runoff to the downstream conveyance system. The wetland area may be damaged by development around the perimeter and this may decrease the ability of the surface water to infiltrate. Runoff will continue to increase and erosion and sedimentation will likewise continue. | <ul style="list-style-type: none"> <li>- Obtain required easements and construct a regional R/D facility in wetland area.</li> <li>- Construct berms along the western and northern sides of the existing wetland.</li> <li>- Increase the storage capacity of the wetland by excavation.</li> </ul> |
| 11   | 0006<br>RM .50-<br>1.40    | 7                 | Habitat   |             | Stream flows through wetland. No visible channel. Fish transit through this cattail wetland looks difficult.                                                    | Condition will continue.                                                                                                                                                                                                                                                                                                                    | If anadromous fish were reintroduced to Panther Creek, wetland passage would need to be assured. A biological assessment by fisheries and wetland biologists would be needed to formulate a viable solution.                                                                                         |



| Item | Trib. &<br>River Mile    | Collect.<br>Point | Category | Prop. Proj. | Existing<br>Conditions and Problems                                                                                                                                              | Anticipated<br>Conditions and Problems                                                                                                                                                                                 | Recommendations                                                                                                                                                                                                                                                            |
|------|--------------------------|-------------------|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12   | 0006<br>RM 1.40-<br>2.60 | 8, 10             | Geology  |             | Channel downcutting at upper end; bank erosion and mass-wasting. Deposition above 180th and at wetland below Talbot Rd.                                                          | Problem will get much worse as development proceeds along the ravine and in the upper basin. Ravine is sensitive to high flows in channel, and slopes are susceptible to gullyng. Sediment is filling a major wetland. | <ul style="list-style-type: none"> <li>- Provide additional R/D facilities in upper basin.</li> <li>- Restrict development along ravine edges.</li> <li>- Route runoff around ravine or tightline it to bottom in a safe, nonerosive manner (gully at RM 2.50).</li> </ul> |
| 13   | 0006<br>RM 1.50          | 7                 | Habitat  |             | Alluvial fan from upstream erosion; landslides filling wetland and blocking stream for fish use.                                                                                 | Killing of trees from sediment inundation. Little or no fish passage.                                                                                                                                                  | Provide a sediment pond and increase maintenance or reduce flows upstream to nonerosive levels.                                                                                                                                                                            |
| 14   | 0006<br>RM 1.70          | 8                 | Habitat  |             | 3' drop out of culvert under Talbot Rd with no pool. Potential fish barriers.                                                                                                    | Condition will remain.                                                                                                                                                                                                 | Improve system only if a fisheries biologist deems the Panther Creek system viable for fish.                                                                                                                                                                               |
| 15   | 0006<br>RM 1.75          | 8                 | Habitat  |             | Two debris jams pose potential fish barriers.                                                                                                                                    | Condition will remain.                                                                                                                                                                                                 | Remove debris or improve passage through the debris jams.                                                                                                                                                                                                                  |
| 16   | 0006<br>RM 1.80-<br>2.55 | 10                | Habitat  |             | Extensive bank erosion, channel downcutting and sedimentation has eliminated most pools, fish, and benthic organisms. Both large organic debris and bedload material are active. | Worsening of current conditions.                                                                                                                                                                                       | Same as Trib. 0006, RM 2.55-3.00. (See Item 19 below.)                                                                                                                                                                                                                     |
| 17   | 0006<br>RM 1.95          | 8                 | Habitat  |             | 12' waterfall and concrete channel creating fish barrier.                                                                                                                        | No future fish access to upstream areas.                                                                                                                                                                               | If the upstream habitat justifies improvement, then a fish ladder should be constructed over the falls.                                                                                                                                                                    |



| <u>Item</u> | <u>Trib. &amp;<br/>River Mile</u> | <u>Collect.<br/>Point</u> | <u>Category</u> | <u>Prop. Proj.</u> | <u>Existing<br/>Conditions and Problems</u>                                                                                                                                                                        | <u>Anticipated<br/>Conditions and Problems</u>                                                                                                                                                                                                                                                                                                      | <u>Recommendations</u>                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------|---------------------------|-----------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18          | 0006<br>RM 2.15                   | 8                         | Geology         |                    | Large landslide (translational and rotational failure), with raw slope remaining; gulying of slope. Apparently caused by combination of undercutting by stream and routing of road drainage over slope from above. | Slide will continue to contribute to sedimentation downstream.                                                                                                                                                                                                                                                                                      | Direct surface runoff away from top of slope to gravel pit (to west).                                                                                                                                                                                                                                                                                                                                                        |
| 19          | 0006<br>RM 2.55-<br>3.00          | 10                        | Habitat         |                    | Stream in good condition. Setbacks and protective vegetation needed at points along the stream. Some good pools and spawning gravel in a few places.                                                               | Possible erosion and loss of habitat if future development increases volume and rate of flow.                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>- Maintain stream flows at non-erosive levels</li> <li>- Maintain a natural stream corridor from Panther Lake down into and along Panther Creek.</li> </ul>                                                                                                                                                                                                                           |
| 20          | 0006<br>RM 3.40                   | 10                        | Hydrology       | 0301               | Panther Lake is a #1-C wetland that provides a large amount of natural storage; the downstream system is in fair condition with some erosion. The contributing drainage area is not currently densely developed.   | Future development in this area will triple the amount of impervious area. The available area for regional R/D facilities may soon be exhausted and the system will continue unchecked downstream. Erosive soils throughout the area are further threatened as higher amounts of runoff will increase the rate at which the existing stream erodes. | The sensitive nature of the wetland would require precise boundary surveys and control over the amount of water artificially retained by the proposed control. Use Panther Lake as an R/D facility by constructing earthen berms on the north and west sides of the wetland area; construct a control outlet, enhance and increase the capacity of the downstream channel (stabilize with vegetation), and obtain easements. |

| Item | Trib. & Collect. Point      | Category | Prop. Probl. | Existing Conditions and Problems                                                                                                                                                                             | Anticipated Conditions and Problems                                                                                                                                                                                      | Recommendations                                                                                                       |
|------|-----------------------------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 21   | 0006A<br>RM .10             | Habitat  | 7            | Inleed stream eroded to bedrock above Tailbot Rd. Little or no habitat value. Two slides are depositing sediment in large wetland on east side of Valley Freeway (inside city of Renton).                    | Reduction of wetland area and values. Loss of flood storage.                                                                                                                                                             | Consider lightening stream from Whitworth Ave. S to Tailbot Rd.                                                       |
| 22   | 0006A<br>RM .10-.20         | Geology  | 7            | Erosion in short channel reach below development: failure of lower slopes downcutting at upper end, gulching of lower slopes throughout.                                                                     | Stormflow is discharged rapidly into channel from culvert below street. Downcutting is prevented at lower end (by bedrock and culvert at Tailbot Rd.) but will continue to undercut slopes at upper end.                 | R/D and/or energy dissipation at upper end of channel needed.                                                         |
| 23   | 0006B<br>RM 1.55-1.70, 1.00 | Geology  | 4            | Extreme gullying below culvert outfall (below Benson Rd.) causing rapid sedimentation, especially in R/D pond (RM 1.55); probably contributing to deposition at RM 1.00.                                     | Runoff from Benson Rd. and area to the east is discharged onto erodible sand and gravel, which is deposited downstream. Most of the coarse material is caught by the R/D pond -- will require more frequent maintenance. | Reroute some or all of the runoff or lightening through the erodible reach. (Problem area is stated for development.) |
| 24   | 0006D                       | Habitat  | 4            | Drainage from Fred Nelson Jr. High School is causing extensive erosion problems between Benson Rd. and SR 515. Large sediment build up in S 22nd Ct. R/D pond at S Puget Dr. No fish habitat in this system. | More property loss from unrestricted flows from Jr. High. High maintenance costs to dredge R/D ponds of silt.                                                                                                            | - Provide R/D at Jr. High School. - Other possibility is to pipe the stream.                                          |



| <u>Item</u> | <u>Trib. &amp;<br/>River Mile</u> | <u>Collect.<br/>Point</u> | <u>Category</u> | <u>Prop. Proj.</u> | <u>Existing<br/>Conditions and Problems</u>                                                                                                                                                                                                                                | <u>Anticipated<br/>Conditions and Problems</u>                                                                                       | <u>Recommendations</u>                                                                                                                                                                                                                                                                                                                                            |
|-------------|-----------------------------------|---------------------------|-----------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25          | 0006C                             | 5                         | Habitat         |                    | Rolling Hills Creek exhibits oil sheen on water in upper portion of the creek. Little or no fish habitat (or potential) exists.                                                                                                                                            | Little change due to riprap along stream to protect sewer line that parallels stream.                                                | None.                                                                                                                                                                                                                                                                                                                                                             |
| 26          | 0009<br>RM .00-<br>.15            | 9                         | Geology         |                    | Bank and lower-slope erosion in small tributary channel, especially behind construction equipment lot.                                                                                                                                                                     | Flows in tributary will increase; erosion will continue causing sedimentation downstream and perhaps threaten stability of building. | <ul style="list-style-type: none"> <li>- R/D in upper basin.</li> <li>- Remove fill along stream.</li> </ul>                                                                                                                                                                                                                                                      |
| 27          | 0009<br>RM .15-.20                | 9                         | Habitat         |                    | Lots of litter; stream has extensive downcutting, bank erosion, and bedload movement.                                                                                                                                                                                      | Worsening of water quality, sedimentation, and erosion.                                                                              | <ul style="list-style-type: none"> <li>- Reduce the volume and rate of water to non-erosive levels by new R/D.</li> <li>- Consider restricting future development (down-zone).</li> <li>- Community action projects could remove litter.</li> </ul>                                                                                                               |
| 28          | 0020<br>RM .20                    | 12                        | Habitat         |                    | Sediment has destroyed fish habitat. City of Kent removes sediment each year.                                                                                                                                                                                              | Possible flooding and sedimentation along S.192nd St.                                                                                | Remove sedimentation source (see also Trib. 0023, RM.95).                                                                                                                                                                                                                                                                                                         |
| 29          | 0020<br>RM .50-<br>.70            | 21                        | Geology         |                    | Bank erosion, landsliding in canyon due to outfalls at end of SE 196th St. and from R/D on 200th plus natural sensitivity (landslides). Heavy damage in Jan. 86 storm. Sedimentation above old road, and in trout farm below Talbot Rd., as well as erosion in the ravine. | Problems will continue.                                                                                                              | <ul style="list-style-type: none"> <li>- Control storm flows. Increase R/D above RM .40 in 0021; reroute or control flows from vicinity of SE 200th (tightline west on 200th).</li> <li>- Provide energy dissipation at R/D outfall (RM .40).</li> <li>- Restrict development on north side of 0021 (runoff to be tightlined or routed around ravine).</li> </ul> |



| <u>Item</u> | <u>Trib &amp;<br/>River Mile</u> | <u>Collect<br/>Point</u> | <u>Category</u> | <u>Prop. Proj.</u> | <u>Existing<br/>Conditions and Problems</u>                                                                                                                                                                                                                                                                                                                            | <u>Anticipated<br/>Conditions and Problems</u>                                                                                                                                                                                                                                                                                                            | <u>Recommendations</u>                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|----------------------------------|--------------------------|-----------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30          | 0020<br>RM .60                   | 21                       | Habitat         |                    | Excess sediment from upstream has destroyed a private trout farm. Thousands of fish were killed during Jan. '86 storm.                                                                                                                                                                                                                                                 | Further sedimentation from upstream sediment sources.                                                                                                                                                                                                                                                                                                     | Several options: construct sediment pond above Talbot Road. Reduce flow rates and volumes in Trib. 0021. Increase R/D upstream of Talbot Rd. Down-zone land to reduce surface water impacts of future development.                                                                                                                                                                         |
| 31          | 0021<br>RM .00<br>0.50           | 22                       | Geology         |                    | Bank erosion, landsliding in ravine due to outfalls at end of SE 196th St. and from R/D pond at SE 200th plus natural sensitivity (landslides). Heavy damage in Jan. '86 storm. Sedimentation above old road and in trout farm below Talbot Rd. (0020), as well as erosion in the canyon.                                                                              | Problems will continue.                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>- Control storm flows: R/D above RM .40 in 0021; reroute or control flows from vicinity of SE 200th (tightline flows west on 200th).</li> <li>- Provide energy dissipation at R/D outfall (RM .40).</li> <li>- Restrict development on north side of 0021 (runoff to be tightlined or routed around canyon).</li> </ul>                             |
| 32          | 0021<br>RM .40                   | 22                       | Hydrology       | 0302               | The upper reaches of Springbrook Creek lie within the city of Renton City Watershed. The creek originates in highly erosive and steeply sloping soils. Alterations of the natural drainage patterns by development, roadway construction, and poor practice in handling runoff have increased erosion and sediment transport to the lower gradient downstream reaches. | Development will continue and impervious area will continue to grow. Increased runoff will further erode the unstable soils carrying sediment and debris downstream, where they will reduce the efficiency of or even destroy culverts, pipelines, and streambeds. Flooding could result from the inefficient facilities coupled with the greater runoff. | <ul style="list-style-type: none"> <li>- Construct a regional R/D facility in the natural drainage swale at the upper reaches of this system.</li> <li>- Construct a dam across the swale with an outlet control structure and an overflow spillway.</li> <li>- Tightline existing drainage into area to further reduce erosion and raise existing roadway to prevent flooding.</li> </ul> |

# APPENDIX C

FIGURE 3.2.2.A RAINFALL REGIONS AND REGIONAL SCALE FACTORS

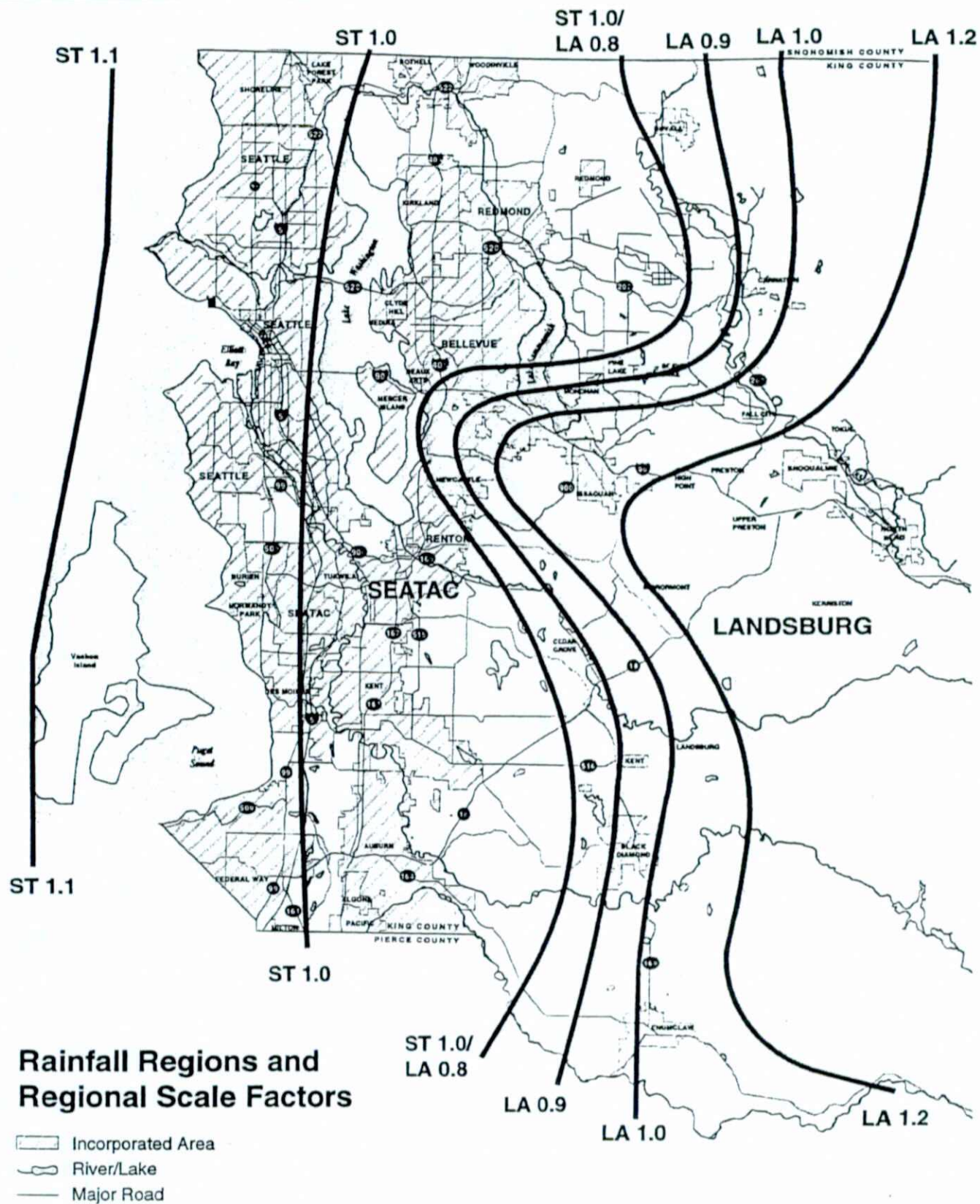
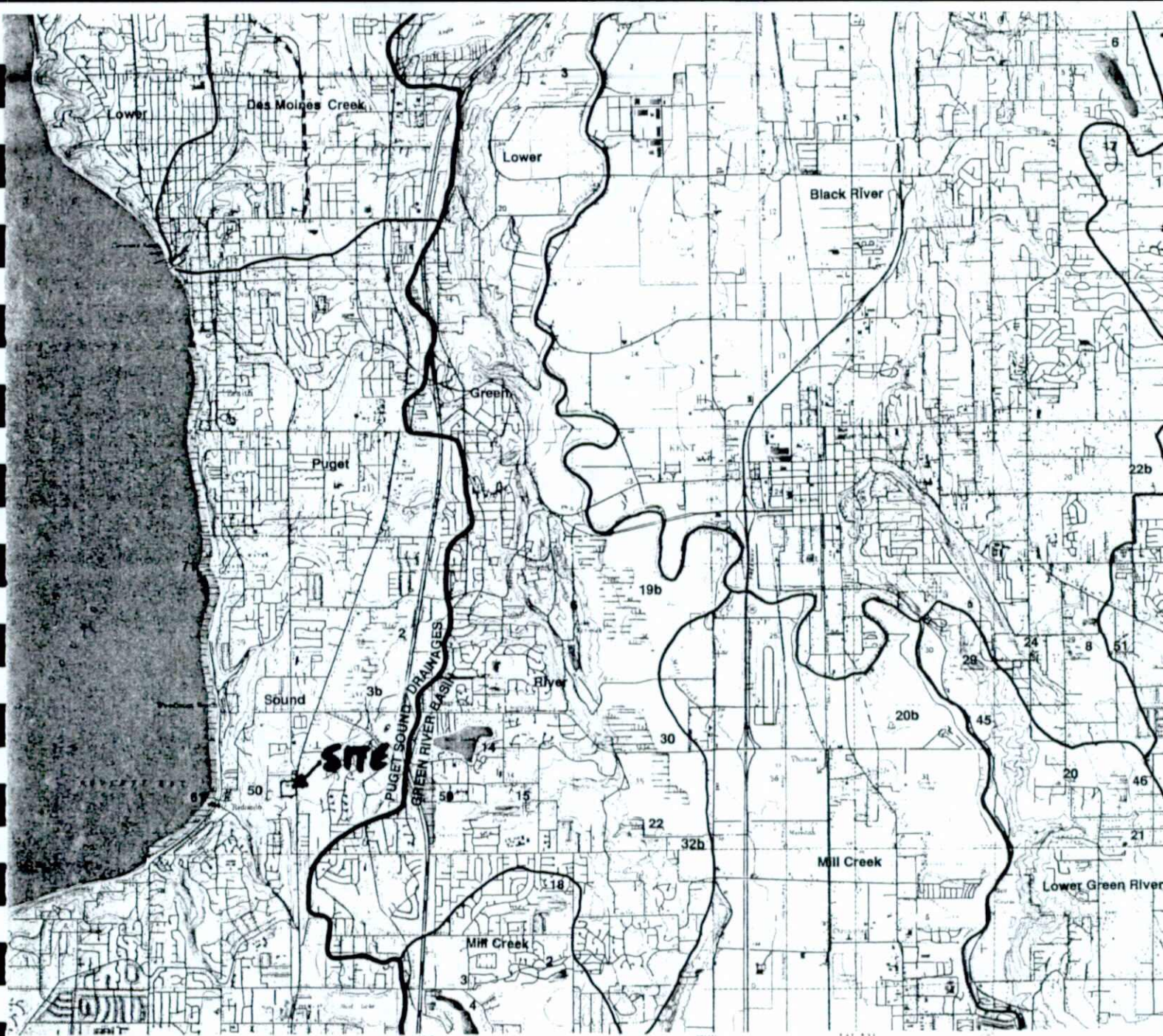




TABLE 3.2.2.B EQUIVALENCE BETWEEN SCS SOIL TYPES AND KCRTS SOIL TYPES

| SCS Soil Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SCS Hydrologic Soil Group | KCRTS Soil Group | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|-------|
| Alderwood (AgB, AgC, AgD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | C                         | Till             |       |
| Arents, Alderwood Material (AmB, AmC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C                         | Till             |       |
| Arents, Everett Material (An)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | B                         | Outwash          | 1     |
| Beausite (BeC, BeD, BeF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | C                         | Till             | 2     |
| Bellingham (Bh)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | D                         | Till             | 3     |
| Briscot (Br)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | D                         | Till             | 3     |
| Buckley (Bu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | D                         | Till             | 4     |
| Earlmont (Ea)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | D                         | Till             | 3     |
| Edgewick (Ed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | C                         | Till             | 3     |
| Everett (EvB, EvC, EvD, EvF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | A/B                       | Outwash          | 1     |
| Indianola (InC, InA, InD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A                         | Outwash          | 1     |
| Kitsap (KpB, KpC, KpD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | C                         | Till             |       |
| Klaus (KsC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | C                         | Outwash          | 1     |
| Neilton (NeC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A                         | Outwash          | 1     |
| Newberg (Ng)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | B                         | Till             | 3     |
| Nooksack (Nk)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | C                         | Till             | 3     |
| Norma (No)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D                         | Till             | 3     |
| Orcas (Or)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D                         | Wetland          |       |
| Oridia (Os)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | D                         | Till             | 3     |
| Ovall (OvC, OvD, OvF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C                         | Till             | 2     |
| Pilchuck (Pc)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | C                         | Till             | 3     |
| Puget (Pu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | D                         | Till             | 3     |
| Puyallup (Py)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | B                         | Till             | 3     |
| Ragnar (RaC, RaD, RaE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B                         | Outwash          | 1     |
| Renton (Re)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | D                         | Till             | 3     |
| Salal (Sa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | C                         | Till             | 3     |
| Sammamish (Sh)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | D                         | Till             | 3     |
| Seattle (Sk)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | D                         | Wetland          |       |
| Shalcar (Sm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | D                         | Till             | 3     |
| Si (Sn)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | C                         | Till             | 3     |
| Snohomish (So, Sr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | D                         | Till             | 3     |
| Sultan (Su)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | C                         | Till             | 3     |
| Tukwila (Tu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | D                         | Till             | 3     |
| Woodinville (Wo)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D                         | Till             | 3     |
| Notes:<br>1. Where outwash soils are saturated or underlain at shallow depth (<5 feet) by glacial till, they should be treated as till soils.<br>2. These are bedrock soils, but calibration of HSPF by King County DNR shows bedrock soils to have similar hydrologic response to till soils.<br>3. These are alluvial soils, some of which are underlain by glacial till or have a seasonally high water table. In the absence of detailed study, these soils should be treated as till soils.<br>4. Buckley soils are formed on the low-permeability Osceola mudflow. Hydrologic response is assumed to be similar to that of till soils. |                           |                  |       |





aries of the sensitive areas dis-  
these maps are approximate.  
sensitive areas that have not  
ed may be present on a devel-  
oposal site. Where differences  
een what is illustrated on these  
he site conditions, the actual pre-  
sence on the site of the sensitive  
defined in the Sensitive Area  
is the legal control.

Numbered wetlands, except those with an  
"a" or "b" designation are included in the  
*King County Wetlands Inventory*. The  
locations of wetlands designated "a" have  
been verified on the site by a variety of  
sources. Wetlands designated "b" are map-  
ped in the U.S. Fish and Wildlife Service  
*National Wetlands Inventory*, but their loca-  
tions have not been field verified.

There may be gaps in the numbering se-  
quence within individual drainage basins.

## Wetlands

-  Wetlands
-  Open Water
-  Basin Boundaries
-  Sub-basin Boundaries





as of the sensitive areas dis-  
 ease maps are approximate.  
 nsitive areas that have not  
 may be present on a devel-  
 opal site. Where differences  
 what is illustrated on these  
 site conditions, the actual pre-  
 ce on the site of the sensitive  
 ined in the Sensitive Area  
 he legal control.

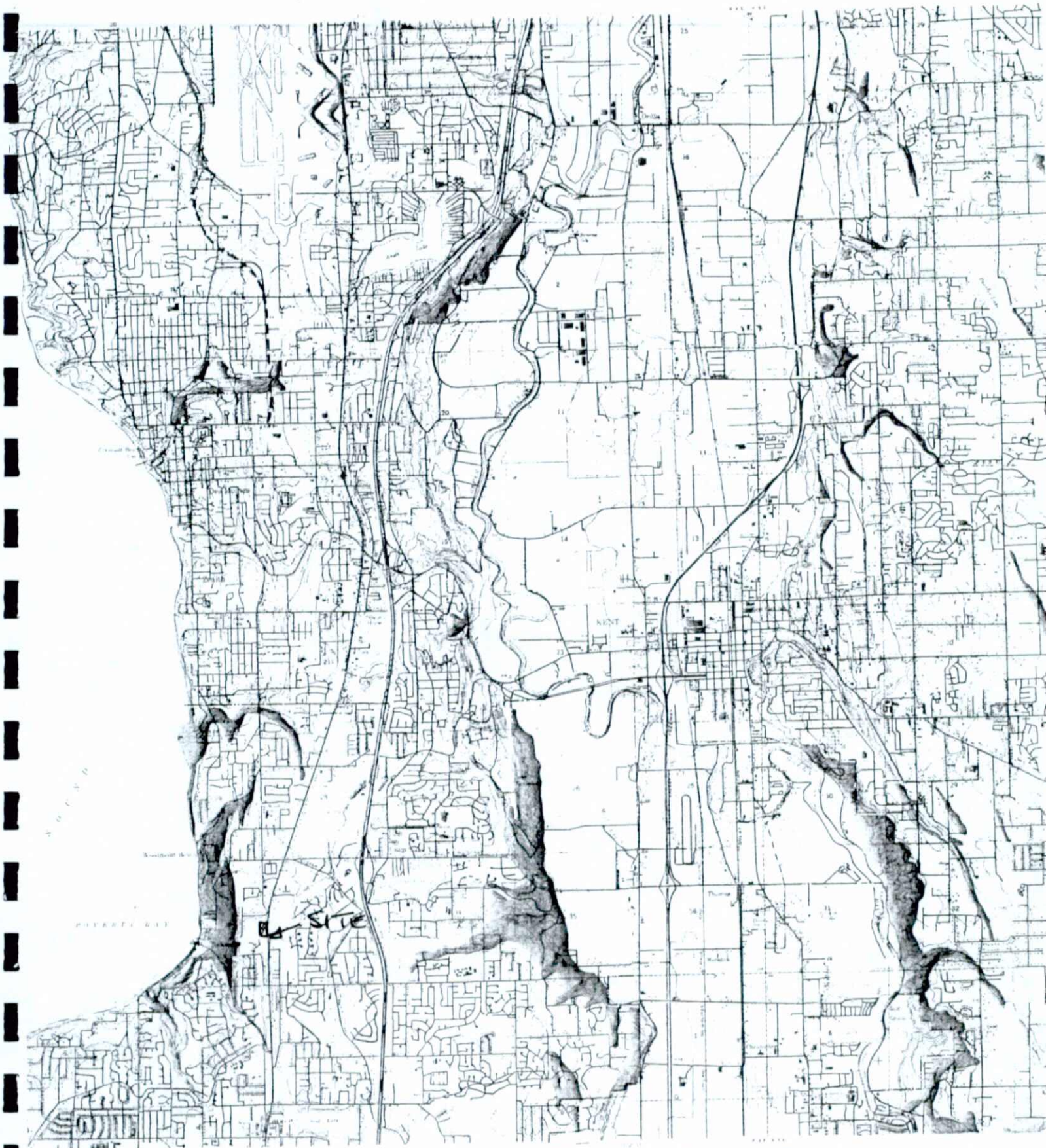
One- hundred-year floodplains extend be-  
 yond those shown on maps. Flood In-  
 surance Rate Maps do not always show the  
 floodplain to the headwaters of streams.

 100-Year Floodplains

## Streams and 100- Year Floodplains

-  Class 1
-  Class 2 (with salmon)
-  Class 2 (perennial; use undetermined)
-  Class 3
-  Unclassified

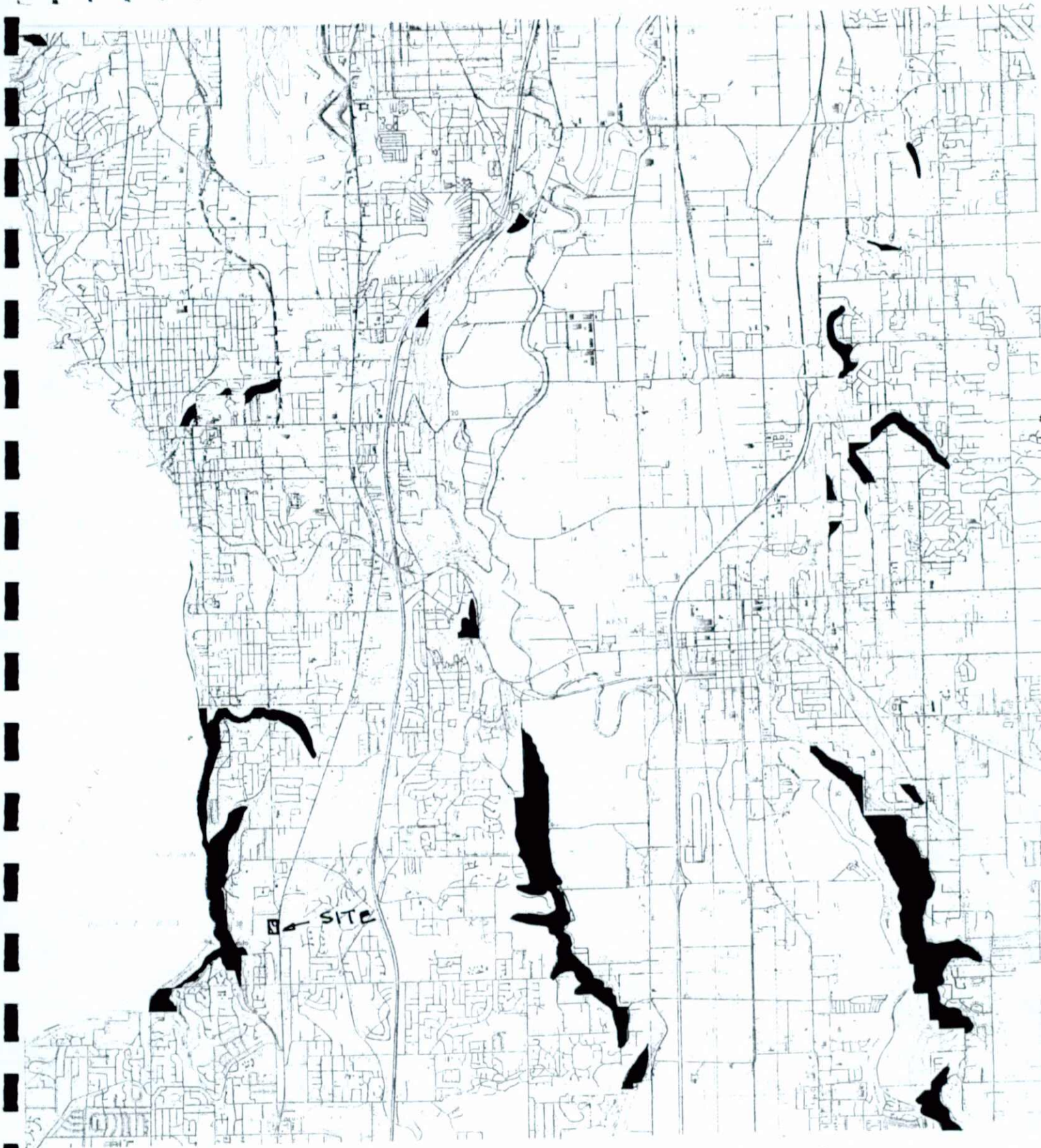




es of the sensitive areas dis-  
these maps are approximate.  
insitive areas that have not  
may be present on a devel-  
iosal site. Where differences  
n what is illustrated on these  
ite conditions, the actual pre-  
ce on the site of the sensitive  
fined in the Sensitive Area  
the legal control.

## Erosion Hazard Areas





Boundaries of the sensitive areas displayed on these maps are approximate. Sensitive areas that have not been identified may be present on a development site. Where differences exist between what is illustrated on these maps and the actual site conditions, the actual presence on the site of the sensitive area is the legal control.

## Landslide Hazard Areas







# APPENDIX D

## OFFSITE DISCHARGE & WATER QUALITY WSDOT BASIN A

2YR RELEASE RATE 0.438 CFS  
100YR RELEASE RATE 1.459 CFS

OUTFALL @ S2+50 ← WSDOT  
WATER QUALITY

SOUTH OF STA. 39+92 (OFFSITE - NOT SR99)

ALL BASIN AREA SOUTH OF STA. 39+92 DISCHARGES  
FROM THE 18" PCSSP PIPE ON THE WEST SIDE OF  
SR99 & DOES NOT ENTER THE PROJECT SITE

BETWEEN STA. 39+92 & STA. 47+07 (OFFSITE - NOT SR99)

### 3.1.1 FLOW CONTROL CRITERIA

Stormwater detention facilities are designed according to WSDOT's 2004 Highway Runoff Manual which requires the post-development peak flows to match the existing peak flows from 50% of the 2-year to the 50-year storm peak flow.

According to Figure 2.1 of the Highway Runoff Manual, flow control is required for basin A and sub-basin B1. There is no new impervious area in sub-basins B2, B3 and basin C, thus flow control is not required for these sub-basins. Detention vaults are provided for basin A and sub-basin B1.

### 3.1.2 ENHANCED WATER QUALITY TREATMENT CRITERIA

Media Filter System (MFS) is proposed for basin A and sub-basin B1 to treat the 2-year storm event in accordance with WSDOT Highway Runoff Manual. The treatment facilities are located downstream of the detention tanks. We provide the Contractor with the 2-year peak flows and the Contractor shall be responsible to design the treatment facilities to accommodate the 2-year peak flow.

There is no new impervious surface in sub-basin B2. According to Figure 2.1 in our Highway Runoff Manual, treatment is not required for this sub-basin.

There is no new impervious area in sub-basin B3 and basin C, however, Oil-Water separators are provided for sub-basin B3 and C since these sub-basins are located at the intersection of S. 272<sup>nd</sup> Street and have more than 25,000 ADT.

#### 3.1.3A OIL CONTROL WATER QUALITY TREATMENT CRITERIA

Oil-water separators are provided at the intersection of 272<sup>nd</sup> Street as mentioned above.

#### 3.1.3B PHOSPHORUS WATER QUALITY TREATMENT CRITERIA

Phosphorus water quality treatment is not required on this project. The basin plan and 303d listing do not indicate phosphorus listing within the project limits. The Ecology Section 303d listing is shown in Section 4.1.5 of this report.

### 3.1.4 OTHER REQUIREMENTS

**A) Reinforced Concrete Class 5:** The existing concrete pipe within basin C is currently in the middle of the HOV lane. A new stormsewer pipe will be installed at the curb face, and the existing stormsewer pipe will be abandoned. This pipe segment will connect to the pipe north of 272<sup>nd</sup> Street within City of Kent. The pipe segment in the City of Kent has less than 2 feet cover. In order for the new stormsewer pipe to connect to City of Kent's pipe, it needs to be installed at a shallow depth, and thus reinforced concrete class 5 is chosen for this reason.

In addition, due to a number of existing utilities within the vicinity of S. 272<sup>nd</sup> Street, the proposed pipe will be in conflict, when crossing S. 272<sup>nd</sup> Street, with several utilities if the minimum 2 feet of cover is maintained. Therefore, it is economically as well as hydraulically feasible to install the proposed storm drainpipe at the same elevation as the existing storm drainpipe. The following justifications were used to keep the existing utilities in their current location and utilize concrete class 5 pipe.



1. A joint trench for high voltage power and Comcast cable was discovered by the City of Kent running east-west direction along the curb face at the north end of S. 272<sup>nd</sup> Street. If the proposed storm drainpipe is installed at a cover of 2ft, it will be in conflict with this joint trench. At the August 2005 meeting with the City of Kent, the City has expressed a great deal of concern if this trench was to be relocated. To relocate this trench, the high voltage power run must be de-energized. Many customers would be affected by this work for extended period of time. The wires have to be removed and reinstalled from SR99 to the service location approximately 500 feet east of SR99. A deeper trench will require shoring in the middle of the roadway. There will be major traffic impact at the intersection since a lane closure is required for relocation. These would have a significant cost implication to the utility company and the City of Kent.
2. On the south end of the S 272<sup>nd</sup> intersection, the proposed storm drainpipe will be in conflict with the existing 12-inch water main and its valves.
3. If the proposed pipe is installed deeper to avoid the conflicts with the joint trench and the water main, it will be in conflict with the existing 12-inch high-pressure gas main enclosed in a 30-inch casing. Relocating this 12-inch high-pressure gas main would require a much deeper open cut in the middle of the roadway at S 272<sup>nd</sup> Street. The City of Kent has expressed against deep open cut at this intersection since they are paving the area in the spring of 2006, and for fear of traffic congestion during construction. Puget Sound Energy has also expressed concern that relocating a high pressure gas main is a dangerous and daunting task that they would absolutely like to avoid at any cost. Furthermore, if the storm drain pipe is installed too deep, it can not outflow to the existing pipe segment to the north since the flow line for the north pipe would be higher than the south pipe segment. The City of Kent already installed all the pipes along the east side of SR99 from 200 feet north of S 272<sup>nd</sup> St approximately to the outfall at S 268<sup>th</sup> Street approximately.

Based on these justifications, it is feasible and preferable to install the proposed storm drain pipe at the same elevation as the existing storm drain pipe using reinforced concrete pipe class 5 to fulfill the minimum cover requirement since reinforce concrete class 5 pipe requires 0.5' of cover. To avoid future open cut at the newly paved intersection of S. 272<sup>nd</sup> Street, the City of Kent is willing to install the pipe crossing across S 272<sup>nd</sup> Street under the current City's construction project.

**B) Reinforced Concrete Class 5 between catch basins at 46+20 (44.00' right) to 47+56 (44.00' right)**

Below is the reasoning why reinforced concrete class V is chosen.

There are three offsite flows connecting to our drainage system. The offsite flows are at

| <u>Station</u> | <u>Offset</u> |
|----------------|---------------|
| 41+40.62       | 35.79' right  |
| 44+11.43       | 34.21' right  |
| 47+55.96       | 51.63' right  |

The offsite flows are coming from the existing detention tanks located on the east side of SR99. We are proposing to build a parallel pipe system under the sidewalk to convey the offsite runoff and separate it from the onsite runoff, and then connect to a cross culvert at station 46+98. The culvert discharges to the same existing outfall at station 47+07 (58' left).

Currently there is an existing sanitary sewer pipe running along the east side of SR99. Also running along the east side is our proposed drainage pipe. There is not enough space to build an 18" crossing at station 46+98 for the offsite runoff. The crossing pipe is installed between the sanitary sewer pipe and our onsite drainage pipe. We are proposing to reduce the crossing pipe from 18" to 12" diameter, and at the same time raise the pipe segment between the catch basins as mentioned-above to create clearance between the pipes. See drainage profile DP 2 for more details.

We also look at the option to install the crossing pipe below the existing sanitary sewer pipe. This option is not feasible because the crossing pipe cannot daylight on the west side of SR99. In addition, there is a Qwest duct running along the west side of SR99. The Qwest duct is in the middle of the 11-foot lane 25 feet from centerline. If the crossing pipe were to install below the sanitary sewer pipe, and if we want the Qwest duct below the crossing pipe, the Qwest duct has to be relocated more than 15 feet deep. In conclusion, installing the crossing pipe between the existing sanitary sewer pipe and our proposed drainage pipe running along the curb is the most economic and feasible option. This option is selected to be included in the contract plan.

We checked the 12" crossing pipe for capacity, and it has capacity of 7.26 cfs. The total offsite runoff is 0.539 cfs. The offsite runoff flows information is obtained from City of Federal Way. By doing so, the clearance between the offsite runoff pipes to the existing sanitary sewer pipe is 1.0 foot, and the clearance between the offsite runoff pipes to the drainage pipe running along the curb face is 0.5'. See Figure 5 for backup calculation and drawing in Appendix A for more details.

By raising the pipe segment running along the curb face, (between catch basins at 46+20 (44.00' right) to 47+56 (44.00' right)), this pipe segment will have 1.16' cover between the top of the pipe to the bottom of the asphalt surface. The asphalt is 0.9' thick. The cover is 2.06' if measured from the roadway-finished grade. The south end of this pipe has cover of 2.2' as required. See drainage profile DP2 between structure D1-27 and D1-32 in Appendix A.

### 3.1.5 LEVEL OF RETROFIT

No retrofitting on this project.

### 3.2.0 DESIGN REFERENCES

#### 3.2.1 MANUALS

WSDOT Design Manual, Section 1210  
WSDOT Highway Hydraulic Manual (March 2004)  
WSDOT Highway Runoff Manual (March 2004)



WSDOT Roadside Manual (M 25-30)  
WSDOT Standard Plans and Specifications  
WSDOT Maintenance Manual, February 2005  
WSDOT Maintenance Manual for Water Quality and Habitat Protection (June 2000)  
Washington State Department of Ecology, *1998 Statewide Water Quality Assessment, 305(B) Report*, June 1998  
National Resource Conservation Service, *Soils Survey of King County Area Washington*, Nov. 1973, sheet 15.

### 3.2.2 BASIN PLANS AND LOCAL REQUIREMENTS

The Hylebos Creek and Lower Puget Sound Basin Plan adopted in 1994 by King County, Des Moines and Federal Way. The design criteria contain in the plans has been superseded by WSDOT Highway Runoff Manual, which is to be use on this project.

## 4.0 Site Conditions

### 4.1.0 EXISTING CONDITIONS

#### 4.1.1 SOILS

The soil type identified along the project, as identified in the Soil Survey of King County Area Soil Survey is Alderwood. Alderwood is a Hydraulic Type C soil. A soil map is included in this report, Figure 3 - Appendix E.

#### 4.1.2 DRAINAGE BASINS

The project site lies within the Duwamish/Green River, Water Resource Inventory Area (WRIA) number 9.

Outfall locations from WSDOT right of way are indicated in Section 4.1.4 of this report. A basin map is included in Appendix D, Figure 2.

There is an existing culvert at station 39+92. The project starts at station 39+64. City of Federal Way will include this portion of roadway into their calculation for detention and treatment within their project limit. The City proposes a detention vault and a treatment facility immediately south of 284<sup>th</sup> Street to detain and treat the runoff from the roadway up to station 39+92. The City's project advertisement date is approximately 6 months to 1 year after this project's advertisement date of April 2006. The City has asked us to replace the cross culvert at station 39+92 at a lower depth so that the City can connect to this cross culvert later on without disturbing the roadway pavement.



### Basin A

#### Existing Condition

Basin A includes both sides of SR99 between station 39+92 to station 52+50. On the east side, it is a cut section. On the west side, it is a fill section. Existing ditch is running along the east side of SR99, the ditch flows into cross culvert at station 39+92, 47+00 and 52+50. These cross culverts discharge onto the embankment on the west side of SR99. On the west side of



THIS DRAINS  
INTO THE  
APPLEWOOD  
DEVELOPMENT  
FORM DRAIN

SR99, the runoff sheet flows over the embankment. The runoff from this basin will eventually reach a wetland located approximately 450 feet west of SR99. The existing outfalls at station 39+92, 47+00 and 52+50 drain to this wetland. The wetland drains to Redondo Creek located to the southwest of this wetland. Redondo Creek drains to Puget Sound. Please see the map in Appendix D for more details.

### ➤ Offsite Flows

Within basin A, there are three offsite flows connecting to our drainage system. The offsite flows are coming from the existing detention tanks located in private properties along the east side of SR99. The locations of these tanks are at station 41+00, 47+00 and 48+90 approximately. We propose to build a parallel-enclosed pipe system to separate offsite and onsite runoff water. The offsite runoff water will not be treated nor detained. The offsite runoff water will be discharged at the same locations as existing. See Figure Drainage Plan D1 in Appendix A for more details about the locations of these offsite flows.

### Post-development Condition

The proposed roadway contains curb and gutter on both sides of SR99. Enclosed pipe system will be installed along the curb face to collect highway runoff. Flow control and treatment facilities are provided in this basin. The detention and treatment facilities are located in the median between station 49+20 to station 52+50. Treatment facility is located downstream of the detention tank. Originally, the detention tank and treatment facilities were proposed to be built under the sidewalk on the east side of SR99, within the same station limits as mentioned above. However, due to constructability issue, with deep excavation next to a cut retaining wall as high as 20 feet, the facilities were redesigned to be installed in the median. A meeting with NWR Hydraulics, Head Quarter Bridge & Geotechnical Office and our PE Office was held on July 25, 2005 to brainstorm this issue. The roadway longitudinal slope is 3.2%, the detention tank is 290 feet long, and the treatment facility is 20 feet long. In conclusion, PE Office, Structural Office and NWR Hydraulics Office agreed it would be best to install the detention and treatment facilities in the median.

**Basin B:** basin B is broken into three sub-basins B1, B2 and B3 since the outfalls from these sub-basins will connect to the same location at southwest corner of 16<sup>th</sup> Avenue and 272<sup>nd</sup> Street.

#### Sub-basin B1

##### Existing Condition

Sub-basin B1 includes both sides of SR99 between station 52+50 to station 64+32. Similar to basin A, a contour map shows the ground is higher on the east side, thus the runoff flows from east to west. There are two existing cross culverts within this sub-basin. The cross culverts are located at station 58+57 and 64+32. The outfalls from these culverts eventually connect to the existing ditch running along the east side of 16<sup>th</sup> Avenue before entering into enclosed pipe system along 16<sup>th</sup> Avenue, at approximately 100 feet south of 276<sup>th</sup> Street. The enclosed pipe system flows west to housing development and then discharge at the upper land located at

Table 2-1. Runoff treatment targets and applications for roadway projects.

| Treatment Target                                                                  | Application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Performance Goal                                                                                                                                                                     |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Treatment                                                                   | <u>Western Washington:</u> All project threshold discharge areas (TDAs) where runoff treatment threshold is met.<br><u>Eastern Washington:</u> All projects where runoff treatment threshold is met.                                                                                                                                                                                                                                                                                                             | 80 percent removal of total suspended solids (TSS)                                                                                                                                   |
| Enhanced Treatment (greater removal of dissolved metals than for basic treatment) | Same as for Basic Treatment<br><u>AND</u><br>Roadway ADT is $\geq 30,000$ <u>or</u> is required by an adopted basin plan or water clean-up plan/TMDL.<br>(See Table 2-2 for receiving water exemptions)                                                                                                                                                                                                                                                                                                          | 50 percent removal of dissolved copper (Cu) and zinc (Zn) for influent concentrations ranging from 0.003 to 0.02 mg/L for dissolved Cu and 0.02-0.3 mg/L for dissolved Zn            |
| Oil Control                                                                       | Same as for Basic Treatment<br><u>AND</u><br>There is an intersection where either $\geq 15,000$ vehicles (ADT) must stop to cross a roadway with $\geq 25,000$ vehicles (ADT) or vice versa. <sup>1</sup><br><u>OR</u><br>Rest areas with an expected ADT count equal to or greater than 100 vehicles per 1,000 square feet of gross building area.<br><u>OR</u><br>Maintenance facilities that park, store, or maintain 25 or more vehicles (trucks or heavy equipment) that exceed 10 tons gross weight each. | No ongoing or recurring visible sheen and 24-hr average total petroleum hydrocarbon concentration of not greater than 10 mg/L with a maximum of 15 mg/L for a discrete (grab) sample |
| Phosphorus Control                                                                | Same as for Basic Treatment<br><u>AND</u><br>The project is located in a designated area requiring phosphorus control as prescribed through an adopted basin plan or water clean-up plan/TMDL. <sup>2</sup>                                                                                                                                                                                                                                                                                                      | 50 percent removal of total phosphorus for influent concentrations ranging from 0.1 to 0.5 mg/L TP                                                                                   |

<sup>1</sup> Treatment is required for these high-use roadway intersections for lanes where vehicles accumulate during the signal cycle, including left- and right-turn lanes from the beginning of the left-turn pocket. If no left-turn pocket exists, the treatable area must begin at a distance equal to three car lengths from the stop line. If runoff from the intersection drains to more than two collection areas that do not combine within the intersection, treatment may be limited to any two of the collection areas where the cars stop.

<sup>2</sup> Contact WSDOT regional hydraulics or environmental staff to determine if phosphorus control is required for a project.



flows. The Contractor shall be responsible to design the treatment facilities to accommodate the 2-year peak flow. See attached special provision for the treatment facilities.

#### **A.2.10 USE OF WETLANDS**

There is no wetland within the project limits.

#### **A.2.11 OTHER HYDRAULIC FEATURES**

No other hydraulic features required.

#### **A.2.12 TRAFFIC ANALYSIS DATA**

The traffic analysis data is not applicable in this project since there is no rest area improvements are proposed.

#### **A.3.0 BMP TRIBUTARY AREA SUMMARY**

Detention and treatment facilities are provided for basin A and sub-basin B1.

There is no new impervious surface created in sub-basin B2, B3 and basin C. Detention and treatment are not provided for sub-basin B2 since there is no new impervious surface created within this sub-basin. Oil/water separators will be provided for sub-basin B3 and basin C since these basins are located near the intersection that has more than 25,000 ADT.

#### **A.4.01 FLOW CONTROL BMPS**

##### **A.4.01A VAULTS**

Pre-cast concrete detention vaults are proposed for this project. The first detention vault is located between Sta. 49+20 and Sta. 52+50 in the median. The second detention vault is located between Sta. 61+80 (RT) and Sta. 63+40 (RT) under the sidewalk.

##### **A.4.02 RUNOFF TREATMENT BMPS**

City of Federal Way uses Stormwater Filter System ([www.stormwaterinc.com](http://www.stormwaterinc.com)) exclusively within the City limits. The City would like us to use the same system since the City is going to maintain the system. We propose a general stormwater filter system in the special provision. The Contractor shall be responsible to propose a treatment system that accommodates a 2-year post-development peak flow. See attached special provision in appendix xxx for more details.

##### **A.4.03 GUTTER DESIGN**

A DOT approved excel spreadsheet is used for the gutter analysis. Backup calculation is included in Appendix A.2.1.

##### **A.4.04 SAG DESIGN**

There is no sag within project limits. The entire roadway is sloping from south to north.

##### **A.4.05 ENCLOSED DRAINAGE DESIGN**

Enclosed pipe system is proposed throughout project limits. The enclosed pipe system is installed at the curb face. A DOT approved excel spreadsheet is used to design the stormsewer



## MEDIA FILTER SYSTEM MEDIA FILTER SYSTEM

### Description

Section 8-01.1 is supplemented with the following:

The Media Filter System (MFS) product shall be a commercially available stormwater treatment system. The system includes components which use filter media to treat stormwater by reducing or removing metals in runoff, turbidity, oil, and floatables. The MFS product is placed downstream of permanent detention systems as shown on the plans. There are two media filter systems in the project.

System 1: station 52+00, to be installed in the median, downstream of the detention tank.

System 2: station 63+00, to be installed under the sidewalk on the eastside of SR99, downstream of the detention tank.

### Materials

Section 8-01.2 is supplemented with the following:

The MFS shall be the Stormwater Treatment System currently used by City of Federal Way or approved equal. More information about this system is available at the website [www.stormwaterinc.com](http://www.stormwaterinc.com). The name, address and phone number for this manufacture are listed below:

Stormwater Management, Inc.  
12021-B NE Airport Way  
Portland, OR 97220  
800-548-4667  
800-561-1271 fax  
[info@stormwaterinc.com](mailto:info@stormwaterinc.com)

The Contractor shall design the MFS facilities to treat at least the full 2-year release rate from the detention facilities as provided below. The MFS system must be able to bypass the 100-year release rate from the detention facilities.

#### System 1

2-year release rate is 0.438 cfs  
100-year release rate is 1.459 cfs

#### System 2

2-year release rate is 0.886 cfs  
100-year release rate is 2.288 cfs

The MFS system shall support H-25 traffic loading as designed by the manufacturer and include a minimum of 2 locking maintenance access covers designed for H-25 Loading.

### **Construction Requirements**

Section 8-01.3 is supplemented with the following:

The MFS product used shall be a complete commercially available unit used for permanent stormwater treatment. MFS products used for temporary stormwater treatment shall not be used.

The Contractor shall secure 1 year of maintenance from the manufacturer for the MFS product to extend beyond the project completion date unless otherwise approved by the engineer.

The Contractor shall submit the type of MFS product for approval 30 days prior to installation of the product.

The MFS product shall not be used to treat construction stormwater runoff.

Connections between conveyance, the detention system and the MFS product shall be as approved by the engineer

### **Measurement**

Section 8-01.4 is supplemented with the following:

Media Filter System (MFS) will be measured per each.

### **Payment**

Section 8-01.5 is supplemented with the following:

"Media Filter System No \_\_\_\_\_", each.

The unit contract price per each for "Media Filter System No \_\_\_\_\_" shall be full pay for all costs for furnishing and installing, concrete cover, risers, ladders, riser covers, foundation, excavation, gravel backfill, paving and equipment necessary to complete the work as specified. The unit contract price also include for designing and sizing the runoff treatment facilities.

All other costs for installation including connections to the MFS system and bypass system shall be considered incidental to the contract and included in other items.



Storm Filter Construction Specifications

1 **Measurement**  
2 Section 7-05.4 is supplemented with the following:  
3  
4 (.....)  
5 "Liner Pipe", linear foot.  
6

7 **Payment**  
8 Section 7-05.05 is supplemented with the following:  
9  
10 (.....)  
11 "Liner Pipe", linear foot.  
12

13 The liner pipe shall be full pay for furnishing, installation and all other associated cost  
14 related to perform this work.  
15

16 **DIVISION 8**  
17 **MISCELLANEOUS CONSTRUCTION**  
18  
19 **EROSION CONTROL AND WATER POLLUTION CONTROL**  
20  
21 **STORMWATER MANAGEMENT STORMFILTER**

22 **Description**  
23 Section 8-01.1 is supplemented with the following:  
24

25 (.....)  
26 The Stormwater Management StormFilter is a passive siphon-actuated, flow-through,  
27 stormwater filtration system consisting of an underground vault structure that houses  
28 rechargeable, media-filled filter cartridges. The StormFilter works by passing  
29 stormwater through the media-filled cartridges, which trap particulates and adsorb  
30 pollutants such as dissolved metals, nutrients and hydrocarbons. The Stormwater  
31 Management StormFilter system is placed downstream of permanent detention systems  
32 as shown on the plans. There are two media filter systems in the project.  
33

34 **System 1:** station 52+00, to be installed in the median, downstream of the detention  
35 tank.  
36

37 The Contractor shall use the following information for designing the Stormwater  
38 Management StormFilter System:  
39

40 **Flow and Site Data For System 1:**  
41  
42 Total drainage area: 3.37 acres  
43 Impervious drainage area: 2.845 acres  
44 Mean annual precipitation: 36 inches/year  
45 Water quality flow: 0.438 cfs  
46 Maximum detention release rate: 1.459 cfs  
47 Detention release rate at 2-year storm: 0.438 cfs  
48

49 **Volume and Depth Data For System 1:**  
50  
51 Wet basin storage in detention: 1121 cubic feet

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Average depth of wet basin: 0.5 foot  
Live storage volume at 2-year storm: 9,017 cubic feet  
Average depth of detained live volume: 3.5 feet  
Wet basin surface area: 3,204 square feet

**System 2:** station 63+00, to be installed under the sidewalk on the eastside of SR99,  
downstream of the detention tank.

The Contractor shall use the following information for designing the Stormwater  
Management StormFilter System:

**Flow and Site Data For System 2:**  
  
Total drainage area: 3.65 acres  
Impervious drainage area: 3.04 acres  
Mean annual precipitation: 36 inches/year  
Water quality flow: 0.886 cfs  
Maximum detention release rate: 2.288 cfs  
Detention release rate at 2-year storm: 0.886 cfs

**Volume and Depth Data For System 2:**  
  
Wet basin storage in detention: 206 cubic feet  
Average depth of wet basin: 0.5 foot  
Live storage volume at 2-year storm: 1,786 cubic feet  
Average depth of detained live volume: 3.5 feet  
Wet basin surface area: 588 square feet

**Materials**  
Section 8-01.2 is supplemented with the following:

(.....)  
The Stormwater Management StormFilter systems shall be manufactured by  
Stormwater 360. The name, address and phone number for this manufacturer are listed  
below:

Stormwater 360, Inc.  
12021-B NE Airport Way  
Portland, OR 97220  
800-548-4667  
503.240.9553 fax  
[info@stormwaterinc.com](mailto:info@stormwaterinc.com)

The Contractor shall design the Stormwater Management StormFilter Systems to treat  
at least the full 2-year release rate from the detention facilities as provided below. The  
Stormwater Management StormFilter systems must be able to allow the 100-year  
release rate to flow through the systems.

**System 1**  
Media = ZPG cartridges  
Number of cartridges = 17  
Per cartridge flow rate = 15 gpm

ZEOLITE  
PERLITE  
GRANULAR ACTIVATED  
CARBON



STORM FILTER  
CONSTRUCTION SPECIFICATIONS

Drop required from inlet to outlet = 2.3' minimum

#### System 2

Media = ZPG cartridges

Number of cartridges = 27

Per cartridge flow rate = 7.5 gpm

Drop required from inlet to outlet = 2.3' minimum

A high-flow, the StormGate, which provides a combination weir-orifice control structure to limit the flow to the StormFilter and a bypass system is required for this system.

The underground vault structure for the Stormwater Management StormFilter systems shall support H-25 traffic loading as designed by the manufacturer and include a minimum of two locking maintenance access covers designed for H-25 loading. Materials shall conform to Section 7-05.2.

As part of the Stormwater Management Stormfilter System, the Contractor shall design the outfall pipe from the system vault to the next downstream drainage structure.

The Contractor shall submit the type and design of the Stormwater Management StormFilter product for approval 30 calendar days prior to installation of the product. The submittal shall include treatment flow calculations and complete shop drawings and calculations for the H-25 load rated underground vault structure and access hatches consistent with the requirements of Section 6-01.9. The Contractor shall also include the vault outfall pipe design as part of this submittal.

#### Construction Requirements

Section 8-01.3 is supplemented with the following:

(.....)

The Stormwater Management StormFilter system and associated outfall pipe shall be installed in conformance with Section 7-05.3 and 7-08.3 respectively.

The Stormwater Management StormFilter systems shall not be used for temporary stormwater treatment or for highway runoff during construction.

The Contractor shall secure a one year maintenance agreement from the manufacturer for the Stormwater Management StormFilter product to extend one year beyond the project substantial completion date. The maintenance agreement shall list the City of Federal Way as the owner of the maintenance agreement.

#### Measurement

Section 8-01.4 is supplemented with the following:

(.....)

Stormwater Management StormFilter systems will be measured per each.

#### Payment

Section 8-01.5 is supplemented with the following:

(.....)

"Stormwater Management StormFilter System No \_\_\_\_", each.

The unit contract price per each for "Stormwater Management StormFilter No \_\_\_\_" shall be full pay for all costs, excluding shoring or extra excavation, for furnishing and installing the complete system as specified, including but not limited to the underground vault with access hatches, outfall pipe, risers, ladders, riser covers, foundation, sawcutting, excavation, gravel backfill, and paving. The unit contract price also includes designing and sizing the runoff treatment facilities and preparing all required shop drawings and calculations.

Any shoring or extra excavation shall be paid as "Shoring or Extra Excavation Class B", per square foot.

#### Construction Requirements

(April 3, 2006)

Section 8-01.3 is supplemented with the following:

#### Treatment of pH for Concrete Work

Stormwater or dewatering water that has come in contact with concrete rubble, concrete pours, concrete grindings or cement treated soils shall be maintained between pH 6.5 and pH 8.5 before it is allowed to enter surface waters and discharges shall not cause a receiving water pH change of more than 0.2 pH units.

The Contractor shall test runoff during each rain event causing runoff to leave the project site during concrete pouring, grinding, rubblizing activities, when soils are being treated with cement and during the first three storms following those activities. If discharging directly to surface waters or to a storm sewer system, the Contractor shall test the pH of the water, as a first order of work, at the point of discharge, once the pour or grinding has begun for each shift, and periodically, as requested by the Engineer, thereafter. If a test indicates the pH is above 8.5, the Contractor shall immediately discontinue work and initiate treatment according to the plan to lower the pH.

Unless specific measures are identified in the Special Provisions, the pH of water may be reduced by infiltration, dispersion in vegetation or compost, or by pumping to a sanitary sewer system. If water is pumped to the sanitary sewer, the Contractor shall provide, at no cost to the Contracting Agency, a copy of permits and requirements for placing the material into a sanitary sewer system prior to beginning the work.

Work may resume, with treatment, once the pH of the treated material is between 6.5 and 8.5 or it can be demonstrated that the runoff will not reach surface waters.

#### General

(April 1, 2002)

#### Offsite Stormwater

Stormwater is known to enter the project site at the following locations:

Location 1: at station 41+50, offset 30 feet east. This offsite runoff is from the existing detention tank for the apartment located at southeast corner of SR99 and South 283<sup>rd</sup> Street.

SR99 S. 284th St. to S. 272nd St. HOV Lanes

June 8, 2005

## Pervious/Impervious Areas

|                                       | Basin A           | Sub-basin B1      | Sub-basin B2   | Sub-basin B3           | Basin C                | Total Area A - C<br>(square feet) | Total Area A - C (Acre) |
|---------------------------------------|-------------------|-------------------|----------------|------------------------|------------------------|-----------------------------------|-------------------------|
|                                       | 39+64 to 52+50    | 52+50 to 64+50    | 64+50 to 70+10 | 70+10(Lt) to 80+50(Lt) | 70+10(Rt) to 80+50(Rt) | Entire Project                    | Entire Project          |
| Existing Condition                    |                   |                   |                |                        |                        |                                   |                         |
| Pervious Area (s.f.)                  | 52,818            | 32,631            | 2,007          | 5,632                  | 6,067                  | 99,156                            | 2.28                    |
| Pervious Area (Acre)                  | 1.213             | 0.749             | 0.046          | 0.129                  | 0.139                  |                                   |                         |
| Impervious Area (s.f.)                | 93,777            | 126,401           | 57,510         | 47,813                 | 59,230                 | 384,730                           | 8.83                    |
| Impervious Area (Acre)                | 2.153             | 2.902             | 1.320          | 1.098                  | 1.360                  |                                   |                         |
| Total (s.f.)                          | 146,595           | 159,032           | 59,517         | 53,445                 | 65,297                 | 483,886                           | 11.11                   |
| Total (Acre)                          | 3.37              | 3.65              | 1.37           | 1.23                   | 1.50                   |                                   |                         |
| Proposed Condition                    |                   |                   |                |                        |                        |                                   |                         |
| Pervious Area (s.f.)                  | 22,674            | 26,593            | 2,218          | 5,988                  | 8,309                  | 65,782                            | 1.51                    |
| Pervious Area (Acre)                  | 0.521             | 0.611             | 0.051          | 0.137                  | 0.191                  |                                   |                         |
| Impervious Area (s.f.)                | 123,921           | 132,439           | 57,299         | 47,457                 | 56,988                 | 418,104                           | 9.60                    |
| Impervious Area (Acre)                | 2.845             | 3.040             | 1.315          | 1.089                  | 1.308                  |                                   |                         |
| Total (s.f.)                          | 146,595           | 159,032           | 59,517         | 53,445                 | 65,297                 | 483,886                           | 11.11                   |
| Total (Acre)                          | 3.37              | 3.65              | 1.37           | 1.23                   | 1.50                   |                                   |                         |
| New Impervious Area<br>Created (Acre) | 0.692             | 0.139             | 0.000          | 0.000                  | 0.000                  |                                   |                         |
| New Pervious Area<br>Created (Acre)   | 0.00              | 0.00              | 0.005          | 0.008                  | 0.051                  |                                   |                         |
| Discharge (cfs)                       |                   |                   |                |                        |                        |                                   |                         |
| 25-Year                               | 0.879             | 1.397             | 0.596          | 0.499                  | 0.601                  |                                   |                         |
| 50-Year                               | 0.925             | 1.463             | 0.677          | 0.568                  | 0.683                  |                                   |                         |
| 100-Year                              | 1.062             | 1.805             | 0.763          | 0.640                  | 0.770                  |                                   |                         |
| Detention/Treatment (Type)            | Vault/StormFilter | Vault/StormFilter | None           | None                   | None                   |                                   |                         |

Note: New pervious area created are from the planter strips and medians within the project limits.



# MGS FLOOD PROJECT REPORT

Program Version: 3.04

Run Date: 02/08/2006 6:23 AM

Input File Name: BasinA1stRun.fld  
Project Name: SR99 S. 284th St. To S. 272nd St. HOV Lanes  
Analysis Title: 50% of the newly added impervious  
Comments:

## \*\*\*\*\* Precipitation Input\*\*\*\*\*

Extended Precipitation Timeseries Selected  
Climatic Region Number: 13  
Full Period of Record Available used for Routing  
Precipitation Station : 960040 Puget East 40 in MAP 10/01/1939-10/01/2097  
Evaporation Station : 961040 Puget East 40 in MAP  
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1  
HSPF Parameter Region Name : USGS Default

\*\*\*\*\* Default HSPF Parameters Used (Not Modified by User) \*\*\*\*\*

## \*\*\*\*\* Watershed Definition \*\*\*\*\*

Number of Subbasins: 1

\*\*\*\*\* Subbasin Number: 1 \*\*\*\*\*

Contributory to Node: 1  
pass to Node : None

|                 | Area(Acres)  |           |             |
|-----------------|--------------|-----------|-------------|
|                 |              | Developed |             |
|                 | Predeveloped | To Node   | Bypass Node |
| Till Forest     | 0.000        | 0.000     | 0.000       |
| Till Pasture    | 0.692        | 0.000     | 0.000       |
| Till Grass      | 0.000        | 0.000     | 0.000       |
| Outwash Forest  | 0.000        | 0.000     | 0.000       |
| Outwash Pasture | 0.000        | 0.000     | 0.000       |
| Outwash Grass   | 0.000        | 0.000     | 0.000       |
| Wetland         | 0.000        | 0.000     | 0.000       |
| Impervious      | 0.346        | 1.038     | 0.000       |
| Subbasin Total  | 1.038        | 1.038     | 0.000       |

|                 | Lateral Flow Connections |           |            |           |           |            |
|-----------------|--------------------------|-----------|------------|-----------|-----------|------------|
|                 | Predeveloped             |           |            | Developed |           |            |
|                 | Surface                  | Interflow | Grnd Water | Surface   | Interflow | Grnd Water |
| Till Forest     | Node                     | Node      |            | Node      | Node      |            |
| Till Pasture    | Node                     | Node      |            | Node      | Node      |            |
| Till Grass      | Node                     | Node      |            | Node      | Node      |            |
| Outwash Forest  | Node                     | Node      |            | Node      | Node      |            |
| Outwash Pasture | Node                     | Node      |            | Node      | Node      |            |
| Outwash Grass   | Node                     | Node      |            | Node      | Node      |            |
| Wetland         | Node                     | Node      |            | Node      | Node      |            |
| Impervious      | Node                     |           |            | Node      |           |            |
| Lateral 1       |                          |           |            |           |           |            |
| Lateral 2       |                          |           |            |           |           |            |

## \*\*\* Subbasin Connection Summary \*\*\*

Subbasin 1 -----> Node 1

By-Pass Area Connection Summary \*\*\*  
By-Passed Areas in Watershed

| Upstream Node No. | Link Type | Downstream Node |
|-------------------|-----------|-----------------|
| Node 1            | Copy      | Node 2          |

| Upstream Node No. | Link Type | Downstream Node |
|-------------------|-----------|-----------------|
| Node 1            | Post      | Node 2          |





|        |         |
|--------|---------|
| 3.07   | 101.515 |
| 3.13   | 101.530 |
| 3.19   | 101.536 |
| 3.26   | 101.544 |
| 3.32   | 101.544 |
| 4.0    | 101.546 |
| 4.7    | 101.556 |
| 3.55   | 101.564 |
| 3.63   | 101.566 |
| 3.72   | 101.571 |
| 3.80   | 101.597 |
| 3.90   | 101.613 |
| 4.00   | 101.616 |
| 4.10   | 101.618 |
| 4.21   | 101.619 |
| 4.32   | 101.624 |
| 4.45   | 101.626 |
| 4.58   | 101.648 |
| 4.71   | 101.678 |
| 4.86   | 101.689 |
| 5.01   | 101.721 |
| 5.17   | 101.758 |
| 5.35   | 101.763 |
| 5.54   | 101.772 |
| 5.74   | 101.773 |
| 5.95   | 101.808 |
| 6.19   | 101.829 |
| 6.44   | 101.855 |
| 6.71   | 101.870 |
| 7.01   | 101.876 |
| 7.33   | 101.884 |
| 7.69   | 101.898 |
| 8.08   | 101.911 |
| 8.52   | 101.922 |
| 9.00   | 101.933 |
| 9.55   | 101.939 |
| 10.16  | 101.954 |
| 10.86  | 101.984 |
| 11.66  | 102.004 |
| 12.59  | 102.043 |
| 13.68  | 102.099 |
| 14.97  | 102.113 |
| 16.54  | 102.161 |
| 18.47  | 102.216 |
| 20.92  | 102.347 |
| 24.10  | 102.447 |
| 28.44  | 102.449 |
| 34.68  | 102.462 |
| 44.42  | 102.483 |
| 61.77  | 102.486 |
| 101.36 | 102.603 |
| 282.36 | 102.765 |

Postdeveloped Water Surface Elevation Data (ft)  
 Recurrence Interval Computed Using Gringorten Plotting Position  
 Tr (yrs) Link: 1

|           |         |
|-----------|---------|
| 1.05-Year | 100.788 |
| 1.11-Year | 100.876 |
| 1.25-Year | 100.991 |
| 2.00-Year | 101.275 |
| 3.33-Year | 101.544 |
| 5-Year    | 101.718 |
| 10-Year   | 101.949 |
| 25-Year   | 102.297 |
| 50-Year   | 102.483 |
| 100-Year  | 102.599 |

Postdeveloped Infiltrated Water Statistics  
 Volume Statistics Computed for Entire Simulation

| Statistic                        | Link: 1 |
|----------------------------------|---------|
| Total Inflow Volume (ac-ft)      | 453.    |
| Total Volume Infiltrated (ac-ft) | 0.      |
| Percent Infiltrated              | 0.00 %  |

\*\*\*\*\*Compliance Point Results \*\*\*\*\*

Predeveloped Compliance Node: 1  
 Postdeveloped Compliance Node: 2

\*\*\*Point-of-Compliance Annual Maxima Flow Data \*\*\*

Predevelopment Runoff  
 Date Annual Max Q (cfs)

Postdevelopment Runoff  
 Date Annual Max Q (cfs)

|      |       |        |       |
|------|-------|--------|-------|
| 70   | 0.121 | 2.70   | 0.061 |
| 75   | 0.122 | 2.75   | 0.062 |
| 80   | 0.123 | 2.80   | 0.062 |
| 85   | 0.123 | 2.85   | 0.063 |
| 90   | 0.124 | 2.90   | 0.063 |
| 95   | 0.125 | 2.95   | 0.063 |
| 101  | 0.125 | 3.01   | 0.064 |
| 107  | 0.125 | 3.07   | 0.065 |
| 113  | 0.127 | 3.13   | 0.066 |
| 119  | 0.127 | 3.19   | 0.066 |
| 126  | 0.128 | 3.26   | 0.067 |
| 132  | 0.129 | 3.32   | 0.067 |
| 140  | 0.130 | 3.40   | 0.067 |
| 147  | 0.130 | 3.47   | 0.067 |
| 155  | 0.130 | 3.55   | 0.068 |
| 163  | 0.130 | 3.63   | 0.068 |
| 172  | 0.131 | 3.72   | 0.068 |
| 180  | 0.131 | 3.80   | 0.070 |
| 190  | 0.131 | 3.90   | 0.071 |
| 200  | 0.131 | 4.00   | 0.071 |
| 210  | 0.133 | 4.10   | 0.071 |
| 221  | 0.135 | 4.21   | 0.072 |
| 232  | 0.135 | 4.32   | 0.072 |
| 245  | 0.137 | 4.45   | 0.072 |
| 258  | 0.138 | 4.58   | 0.074 |
| 271  | 0.138 | 4.71   | 0.076 |
| 286  | 0.139 | 4.86   | 0.077 |
| 301  | 0.140 | 5.01   | 0.079 |
| 317  | 0.141 | 5.17   | 0.082 |
| 335  | 0.143 | 5.35   | 0.082 |
| 354  | 0.144 | 5.54   | 0.083 |
| 374  | 0.146 | 5.74   | 0.083 |
| 395  | 0.149 | 5.95   | 0.086 |
| 419  | 0.149 | 6.19   | 0.087 |
| 444  | 0.150 | 6.44   | 0.089 |
| 471  | 0.151 | 6.71   | 0.091 |
| 501  | 0.151 | 7.01   | 0.091 |
| 533  | 0.152 | 7.33   | 0.092 |
| 569  | 0.153 | 7.69   | 0.093 |
| 608  | 0.155 | 8.08   | 0.094 |
| 652  | 0.156 | 8.52   | 0.095 |
| 700  | 0.164 | 9.00   | 0.096 |
| 755  | 0.168 | 9.55   | 0.096 |
| 816  | 0.168 | 10.16  | 0.098 |
| 886  | 0.175 | 10.86  | 0.100 |
| 966  | 0.182 | 11.66  | 0.102 |
| 1059 | 0.188 | 12.59  | 0.106 |
| 1168 | 0.193 | 13.68  | 0.111 |
| 1297 | 0.199 | 14.97  | 0.112 |
| 1444 | 0.208 | 16.54  | 0.116 |
| 1617 | 0.211 | 18.47  | 0.122 |
| 1819 | 0.216 | 20.92  | 0.135 |
| 2054 | 0.229 | 24.10  | 0.145 |
| 2334 | 0.239 | 28.44  | 0.146 |
| 2668 | 0.243 | 34.68  | 0.147 |
| 3062 | 0.274 | 44.42  | 0.149 |
| 3537 | 0.282 | 61.77  | 0.149 |
| 4106 | 0.282 | 101.36 | 0.162 |
| 4886 | 0.404 | 282.36 | 0.181 |

\*\*\* Point of Compliance Flow Frequency Data \*\*\*  
Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff |                 | Postdevelopment Runoff |                 |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years)            | Discharge (cfs) | Tr (Years)             | Discharge (cfs) |
| 2-Year                | 0.105           | 2-Year                 | 0.053           |
| 5-Year                | 0.140           | 5-Year                 | 0.079           |
| 10-Year               | 0.168           | 10-Year                | 0.097           |
| 25-Year               | 0.231           | 25-Year                | 0.145           |
| 50-Year               | 0.277           | 50-Year                | 0.149           |
| 100-Year              | 0.282           | 100-Year               | 0.162           |
| 200-Year              | 0.363           | 200-Year               | 0.175           |

Record too Short to Compute Peak Discharge for These Recurrence Intervals

\*\*\* Point of Compliance Flow Duration Data \*\*\*

| Predevelopment Runoff |                        | Postdevelopment Runoff |                        |
|-----------------------|------------------------|------------------------|------------------------|
| Discharge (cfs)       | Exceedance Probability | Discharge (cfs)        | Exceedance Probability |
| 0.000E+00             | 1.0000E+00             | 0.000E+00              | 1.0000E+00             |
| 2.021E-03             | 2.0878E-01             | 9.037E-04              | 2.6899E-01             |
| 4.642E-03             | 3.2601E-01             | 1.000E-03              | 3.4503E-01             |



\*\*\*\* Flow Duration Performance According to Dept. of Ecology Criteria \*\*\*\*

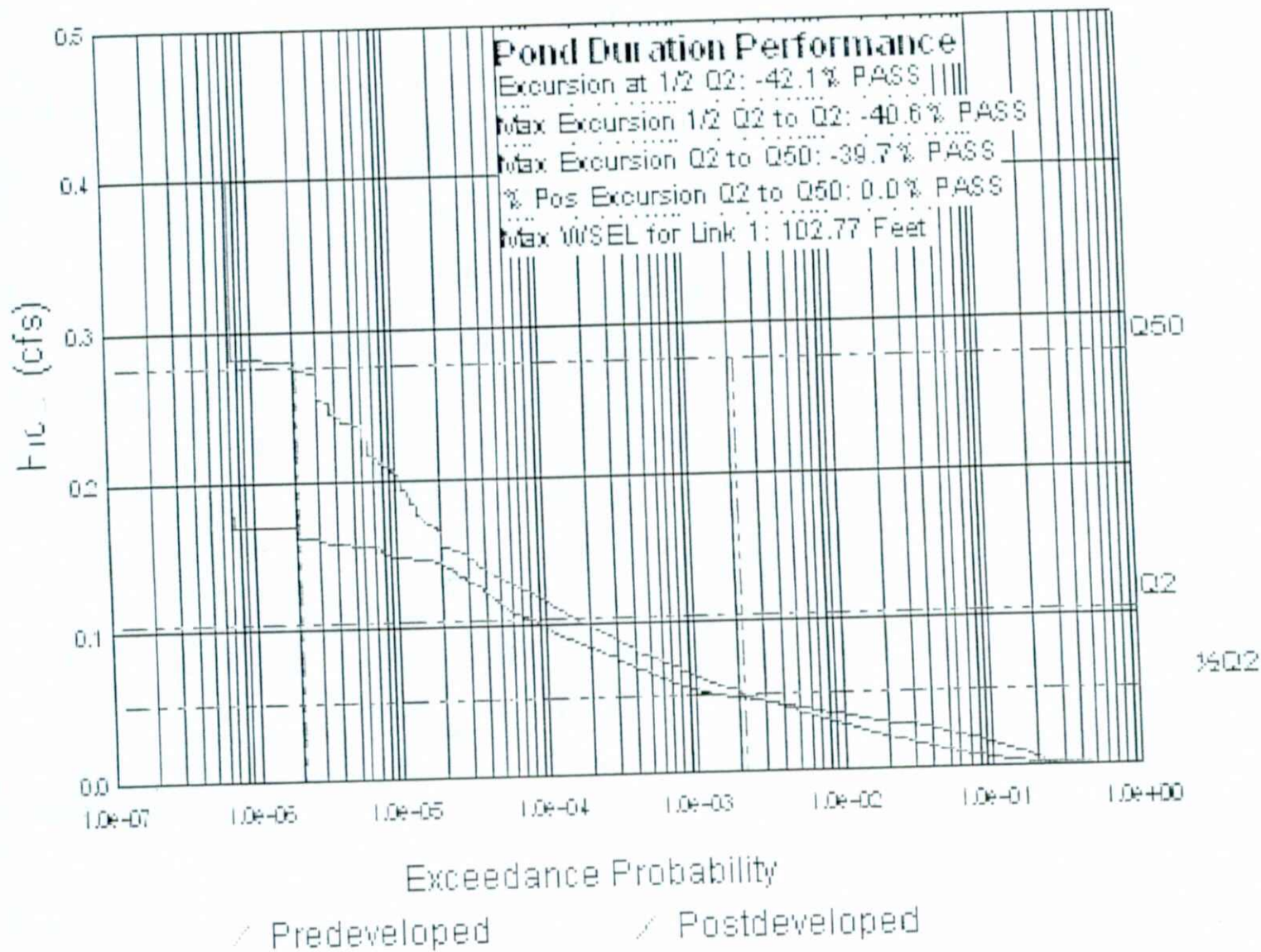
|            |       |            |       |
|------------|-------|------------|-------|
| 2.8880E-06 | 0.162 | 7.2200E-07 | 0.362 |
| 2.1660E-06 | 0.163 | 7.2200E-07 | 0.364 |
| 2.1660E-06 | 0.164 | 7.2200E-07 | 0.366 |
| 2.1660E-06 | 0.164 | 7.2200E-07 | 0.368 |
| 2.1660E-06 | 0.165 | 7.2200E-07 | 0.370 |
| 2.1660E-06 | 0.166 | 7.2200E-07 | 0.372 |
| 2.1660E-06 | 0.167 | 7.2200E-07 | 0.374 |
| 2.1660E-06 | 0.168 | 7.2200E-07 | 0.376 |
| 2.1660E-06 | 0.169 | 7.2200E-07 | 0.378 |
| 7.2200E-06 | 0.170 | 7.2200E-07 | 0.380 |
| 7.2200E-07 | 0.171 | 7.2200E-07 | 0.382 |
| 7.2200E-07 | 0.172 | 7.2200E-07 | 0.384 |
| 7.2200E-07 | 0.173 | 7.2200E-07 | 0.386 |
| 7.2200E-07 | 0.174 | 7.2200E-07 | 0.388 |
| 7.2200E-07 | 0.174 | 7.2200E-07 | 0.390 |
| 7.2200E-07 | 0.175 | 7.2200E-07 | 0.392 |
| 7.2200E-07 | 0.176 | 7.2200E-07 | 0.394 |
| 7.2200E-07 | 0.177 | 7.2200E-07 | 0.396 |
| 7.2200E-07 | 0.178 | 7.2200E-07 | 0.398 |
| 7.2200E-07 | 0.179 | 7.2200E-07 | 0.400 |
| 7.2200E-07 | 0.180 | 7.2200E-07 | 0.402 |
| 7.2200E-07 | 0.181 | 7.2200E-07 | 0.404 |

Excursion at Preddeveloped 1/2 Q2 (Must be Less Than 0%):  
 Maximum Excursion from 1/2 Q2 to Q2 (Must be Less Than 0%):  
 Maximum Excursion from Q2 to Q50 (Must be less than 10%):  
 Percent Excursion from Q2 to Q50 (Must be less than 50%):

PASS -42.1%  
 PASS -40.6%  
 PASS -39.7%  
 PASS 0.0%

\* POND MEETS ALL DURATION DESIGN CRITERIA: PASS

# Flow Duration Plot



# MGS FLOOD PROJECT REPORT

Program Version: 3.04

Run Date: 02/07/2006 8:12 AM

Input File Name: BasinASecondRun.fld  
Project Name: SR99 S. 284th St. To S. 272nd St. HOV Lanes  
Analysis Title: Basin A second run  
Comments:

## \*\*\*\*\* Precipitation Input\*\*\*\*\*

Extended Precipitation Timeseries Selected  
Climatic Region Number: 13  
Full Period of Record Available used for Routing  
Precipitation Station : 960040 Puget East 40 in MAP 10/01/1939-10/01/2097  
Evaporation Station : 961040 Puget East 40 in MAP  
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1  
HSPF Parameter Region Name : USGS Default

\*\*\*\*\* Default HSPF Parameters Used (Not Modified by User) \*\*\*\*\*

## \*\*\*\*\* Watershed Definition \*\*\*\*\*

Number of Subbasins: 1

\*\*\*\*\* Subbasin Number: 1 \*\*\*\*\*

\*\* Tributary to Node: 1  
pass to Node : None

|                 | Area(Acres) |              |             |
|-----------------|-------------|--------------|-------------|
|                 |             | Predeveloped | Developed   |
|                 |             | To Node      | Bypass Node |
| Till Forest     | 0.000       | 0.000        | 0.000       |
| Till Pasture    | 0.521       | 0.521        | 0.000       |
| Till Grass      | 0.000       | 0.000        | 0.000       |
| Outwash Forest  | 0.000       | 0.000        | 0.000       |
| Outwash Pasture | 0.000       | 0.000        | 0.000       |
| Outwash Grass   | 0.000       | 0.000        | 0.000       |
| Wetland         | 0.000       | 0.000        | 0.000       |
| Impervious      | 2.845       | 2.845        | 0.000       |
| Subbasin Total  | 3.366       | 3.366        | 0.000       |

|                 | Predeveloped |           |            | Developed |           |            |
|-----------------|--------------|-----------|------------|-----------|-----------|------------|
|                 | Surface      | Interflow | Grnd Water | Surface   | Interflow | Grnd Water |
| Till Forest     | Node         | Node      |            | Node      | Node      |            |
| Till Pasture    | Node         | Node      |            | Node      | Node      |            |
| Till Grass      | Node         | Node      |            | Node      | Node      |            |
| Outwash Forest  | Node         | Node      |            | Node      | Node      |            |
| Outwash Pasture | Node         | Node      |            | Node      | Node      |            |
| Outwash Grass   | Node         | Node      |            | Node      | Node      |            |
| Wetland         | Node         | Node      |            | Node      | Node      |            |
| Impervious      | Node         |           |            | Node      |           |            |
| Lateral 1       |              |           |            |           |           |            |
| Lateral 2       |              |           |            |           |           |            |

## \*\*\* Subbasin Connection Summary \*\*\*

Subbasin 1 -----> Node 1

## 3y-Pass Area Connection Summary \*\*\*

3y-Passed Areas in Watershed

## \*\*\* Predeveloped Node Connection Summary \*\*\*

| Upstream Node No. | Link Type | Downstream Node |
|-------------------|-----------|-----------------|
| Node 1            | Copy      | Node 2          |

## \*\*\* Postdeveloped Node Connection Summary \*\*\*

| Upstream Node No. | Link Type | Downstream Node |
|-------------------|-----------|-----------------|
| Node 1            | Post      | Node 2          |



Predeveloped Compliance Node: 1  
Postdeveloped Compliance Node: 2

\*\*\* Predeveloped Structure Summary \*\*\*

Link No. 1, Copy

Upstream Node : 1, Downstream Node: 2  
Copy Upstream to Downstream Node

\*\*\* Postdeveloped Structure Summary \*\*\*

Link No. 1, Pond: Vault

Upstream Node : 1, Downstream Node: 2

Prismatic Pond Option Used

Pond Floor Elevation : 100.00ft  
Riser Crest Elevation : 103.00ft  
Max Pond Elevation : 104.00ft  
Max Storage Depth : 3.00 ft  
Pond Bottom Length : 246.5 ft  
Pond Bottom Width : 12.0 ft  
Pond Side Slopes : L1= 0.00 L2= 0.00 W1= 0.00 W2= 0.00 ft/ft  
Pond Bottom Area : 2958. sq-ft  
Area at Riser Crest El : 2,958. sq-ft  
: 0.068 acres  
Volume at Riser Crest : 8,874. cu-ft  
: 0.204 ac-ft  
Area at Max Elevation : 2958. sq-ft  
: 0.068 acres  
Vol at Max Elevation : 11,832. cu-ft  
: 0.272 ac-ft  
Hydraulic Conductivity : 0.00 in/hr  
Depth to Water Table : 100.00 ft

Riser Geometry

Riser Structure Type : Circular  
Riser Diameter : 18.00 in  
Common Length : 0.000 ft  
Riser Crest Elevation : 103.00 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1---

Device Type : Circular Orifice  
Invert Elevation : 100.00 ft  
Diameter : 1.32 in  
Orientation : Horizontal  
Elbow : No

--- Device Number 2 ---

Device Type : Vertical Rectangular Orifice  
Invert Elevation : 101.25 ft  
Length : 0.25 in  
Height : 21.06 in  
Orientation : Vertical  
Elbow : No

\*\*\*\*\*Predeveloped Hydraulic Rating Table\*\*\*\*\*

\*\*\*\*\*Postdeveloped Hydraulic Rating Table\*\*\*\*\*

| Postdeveloped Link:<br>Elev (ft) | 1 | Storage (ac-ft) | Discharge (cfs) | Infiltr Discharge (cfs) |
|----------------------------------|---|-----------------|-----------------|-------------------------|
| 100.000                          |   | 0.000           | 0.000           | 0.000                   |
| 100.018                          |   | 0.001           | 0.006           | 0.000                   |
| 100.035                          |   | 0.002           | 0.009           | 0.000                   |
| 100.070                          |   | 0.005           | 0.012           | 0.000                   |
| 100.140                          |   | 0.010           | 0.017           | 0.000                   |

|        |         |
|--------|---------|
| 3.07   | 103.087 |
| 3.13   | 103.087 |
| 3.19   | 103.088 |
| 3.26   | 103.088 |
| 3.32   | 103.089 |
| 4.0    | 103.091 |
| 4.47   | 103.095 |
| 3.55   | 103.097 |
| 3.63   | 103.098 |
| 3.72   | 103.101 |
| 3.80   | 103.101 |
| 3.90   | 103.102 |
| 4.00   | 103.103 |
| 4.10   | 103.103 |
| 4.21   | 103.103 |
| 4.32   | 103.106 |
| 4.45   | 103.106 |
| 4.58   | 103.106 |
| 4.71   | 103.106 |
| 4.86   | 103.106 |
| 5.01   | 103.107 |
| 5.17   | 103.110 |
| 5.35   | 103.112 |
| 5.54   | 103.112 |
| 5.74   | 103.112 |
| 5.95   | 103.116 |
| 6.19   | 103.119 |
| 6.44   | 103.119 |
| 6.71   | 103.120 |
| 7.01   | 103.121 |
| 7.33   | 103.124 |
| 7.69   | 103.125 |
| 8.08   | 103.126 |
| 8.52   | 103.126 |
| 9.00   | 103.128 |
| 9.55   | 103.128 |
| 10.16  | 103.128 |
| 10.86  | 103.136 |
| 11.66  | 103.136 |
| 12.59  | 103.137 |
| 13.68  | 103.137 |
| 14.97  | 103.137 |
| 16.54  | 103.138 |
| 18.47  | 103.144 |
| 20.92  | 103.148 |
| 24.10  | 103.150 |
| 28.44  | 103.153 |
| 34.68  | 103.153 |
| 44.42  | 103.154 |
| 61.77  | 103.161 |
| 101.36 | 103.182 |
| 282.36 | 103.183 |

Postdeveloped Water Surface Elevation Data (ft)  
 Recurrence Interval Computed Using Gringorten Plotting Position  
 Tr (yrs) Link: 1

|           |         |
|-----------|---------|
| 1.05-Year | 102.358 |
| 1.11-Year | 102.633 |
| 1.25-Year | 102.877 |
| 2.00-Year | 103.058 |
| 3.33-Year | 103.089 |
| 5-Year    | 103.107 |
| 10-Year   | 103.128 |
| 25-Year   | 103.147 |
| 50-Year   | 103.155 |
| 100-Year  | 103.182 |

Postdeveloped Infiltrated Water Statistics  
 Volume Statistics Computed for Entire Simulation  
 Statistic Link: 1

|                                  |        |
|----------------------------------|--------|
| Total Inflow Volume (ac-ft)      | 1318.  |
| Total Volume Infiltrated (ac-ft) | 0.     |
| Percent Infiltrated              | 0.00 % |

\*\*\*\*\*Compliance Point Results\*\*\*\*\*

Predeveloped Compliance Node: 1  
 Postdeveloped Compliance Node: 2

\*\*\*Point-of-Compliance Annual-Maxima-Flow Data\*\*\*

Predevelopment Runoff  
 Date Annual Max Q (cfs)

Postdevelopment Runoff  
 Date Annual Max Q (cfs)

|        |       |        |       |
|--------|-------|--------|-------|
| 2.70   | 0.829 | 2.70   | 0.552 |
| 2.75   | 0.830 | 2.75   | 0.557 |
| 2.80   | 0.831 | 2.80   | 0.557 |
| 2.85   | 0.834 | 2.85   | 0.559 |
| 2.90   | 0.835 | 2.90   | 0.578 |
| 2.95   | 0.840 | 2.95   | 0.606 |
| 3.01   | 0.841 | 3.01   | 0.620 |
| 3.07   | 0.841 | 3.07   | 0.625 |
| 3.13   | 0.845 | 3.13   | 0.626 |
| 3.19   | 0.850 | 3.19   | 0.632 |
| 3.26   | 0.851 | 3.26   | 0.636 |
| 3.32   | 0.851 | 3.32   | 0.640 |
| 3.40   | 0.855 | 3.40   | 0.655 |
| 3.47   | 0.859 | 3.47   | 0.688 |
| 3.55   | 0.869 | 3.55   | 0.697 |
| 3.63   | 0.887 | 3.63   | 0.706 |
| 3.72   | 0.895 | 3.72   | 0.729 |
| 3.80   | 0.897 | 3.80   | 0.732 |
| 3.90   | 0.905 | 3.90   | 0.736 |
| 4.00   | 0.905 | 4.00   | 0.743 |
| 4.10   | 0.907 | 4.10   | 0.746 |
| 4.21   | 0.910 | 4.21   | 0.748 |
| 4.32   | 0.917 | 4.32   | 0.764 |
| 4.45   | 0.925 | 4.45   | 0.768 |
| 4.58   | 0.926 | 4.58   | 0.768 |
| 4.71   | 0.939 | 4.71   | 0.768 |
| 4.86   | 0.941 | 4.86   | 0.769 |
| 5.01   | 0.942 | 5.01   | 0.779 |
| 5.17   | 0.960 | 5.17   | 0.796 |
| 5.35   | 0.969 | 5.35   | 0.813 |
| 5.54   | 0.986 | 5.54   | 0.815 |
| 5.74   | 0.991 | 5.74   | 0.819 |
| 5.95   | 0.998 | 5.95   | 0.851 |
| 6.19   | 1.003 | 6.19   | 0.875 |
| 6.44   | 1.010 | 6.44   | 0.876 |
| 6.71   | 1.016 | 6.71   | 0.878 |
| 7.01   | 1.045 | 7.01   | 0.889 |
| 7.33   | 1.045 | 7.33   | 0.916 |
| 7.69   | 1.046 | 7.69   | 0.925 |
| 8.08   | 1.056 | 8.08   | 0.931 |
| 8.52   | 1.067 | 8.52   | 0.932 |
| 9.00   | 1.108 | 9.00   | 0.945 |
| 9.55   | 1.121 | 9.55   | 0.949 |
| 10.16  | 1.123 | 10.16  | 0.951 |
| 10.86  | 1.155 | 10.86  | 1.014 |
| 11.66  | 1.159 | 11.66  | 1.021 |
| 12.59  | 1.199 | 12.59  | 1.026 |
| 13.68  | 1.212 | 13.68  | 1.026 |
| 14.97  | 1.254 | 14.97  | 1.026 |
| 16.54  | 1.265 | 16.54  | 1.036 |
| 18.47  | 1.280 | 18.47  | 1.093 |
| 20.92  | 1.310 | 20.92  | 1.130 |
| 24.10  | 1.352 | 24.10  | 1.147 |
| 28.44  | 1.359 | 28.44  | 1.178 |
| 34.68  | 1.374 | 34.68  | 1.184 |
| 44.42  | 1.602 | 44.42  | 1.187 |
| 61.77  | 1.772 | 61.77  | 1.255 |
| 101.36 | 1.790 | 101.36 | 1.465 |
| 282.36 | 2.274 | 282.36 | 1.473 |

\*\*\* Point of Compliance Flow Frequency Data \*\*\*  
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff |                 | Postdevelopment Runoff |                 |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years)            | Discharge (cfs) | Tr (Years)             | Discharge (cfs) |
| 2-Year                | 0.757           | 2-Year                 | 0.438           |
| 5-Year                | 0.942           | 5-Year                 | 0.779           |
| 10-Year               | 1.122           | 10-Year                | 0.950           |
| 25-Year               | 1.354           | 25-Year                | 1.154           |
| 50-Year               | 1.663           | 50-Year                | 1.211           |
| 100-Year              | 1.790           | 100-Year               | 1.459           |
| 200-Year              | 2.111           | 200-Year               | 1.470           |

Record too Short to Compute Peak Discharge for These Recurrence Intervals

\*\*\* Point of Compliance Flow Duration Data \*\*\*

| Predevelopment Runoff |                        | Postdevelopment Runoff |                        |
|-----------------------|------------------------|------------------------|------------------------|
| Discharge (cfs)       | Exceedance Probability | Discharge (cfs)        | Exceedance Probability |
| 0.000E+00             | 1.0000E+00             | 0.000E+00              | 1.0000E+00             |
| 0.011                 | 1.3953E-01             | 0.007                  | 3.1072E-01             |
|                       |                        |                        |                        |



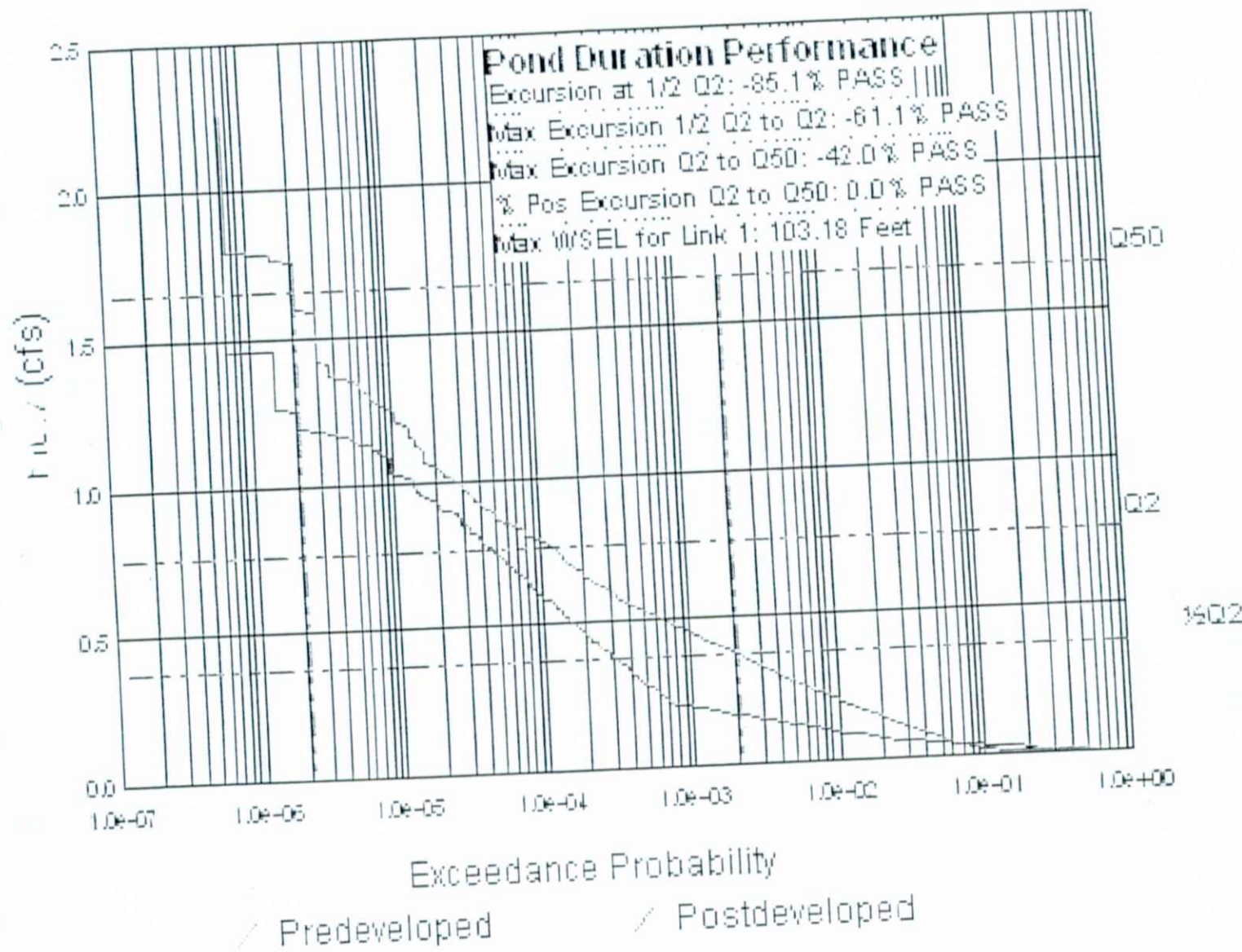
|       |            |       |            |
|-------|------------|-------|------------|
| 2.035 | 7.2200E-07 | 1.318 | 1.4440E-06 |
| 2.046 | 7.2200E-07 | 1.326 | 1.4440E-06 |
| 2.058 | 7.2200E-07 | 1.333 | 1.4440E-06 |
| 2.069 | 7.2200E-07 | 1.340 | 1.4440E-06 |
| 2.080 | 7.2200E-07 | 1.348 | 1.4440E-06 |
| 2.092 | 7.2200E-07 | 1.355 | 1.4440E-06 |
| 2.103 | 7.2200E-07 | 1.363 | 1.4440E-06 |
| 2.114 | 7.2200E-07 | 1.370 | 1.4440E-06 |
| 2.126 | 7.2200E-07 | 1.377 | 1.4440E-06 |
| 2.137 | 7.2200E-07 | 1.385 | 1.4440E-06 |
| 2.148 | 7.2200E-07 | 1.392 | 1.4440E-06 |
| 2.160 | 7.2200E-07 | 1.399 | 1.4440E-06 |
| 2.171 | 7.2200E-07 | 1.407 | 1.4440E-06 |
| 2.183 | 7.2200E-07 | 1.414 | 1.4440E-06 |
| 2.194 | 7.2200E-07 | 1.422 | 1.4440E-06 |
| 2.205 | 7.2200E-07 | 1.429 | 1.4440E-06 |
| 2.217 | 7.2200E-07 | 1.436 | 1.4440E-06 |
| 2.228 | 7.2200E-07 | 1.444 | 1.4440E-06 |
| 2.239 | 7.2200E-07 | 1.451 | 1.4440E-06 |
| 2.251 | 7.2200E-07 | 1.458 | 1.4440E-06 |
| 2.262 | 7.2200E-07 | 1.466 | 7.2200E-07 |
| 2.274 | 7.2200E-07 | 1.473 | 7.2200E-07 |

\*\*\*\* Flow Duration Performance According to Dept. of Ecology Criteria \*\*\*\*

|                                                            |        |      |
|------------------------------------------------------------|--------|------|
| Excursion at Predeveloped 1/2Q2 (Must be Less Than 0%):    | -85.1% | PASS |
| Maximum Excursion from 1/2Q2 to Q2 (Must be Less Than 0%): | -61.1% | PASS |
| Maximum Excursion from Q2 to Q50 (Must be less than 10%):  | -42.0% | PASS |
| Percent Excursion from Q2 to Q50 (Must be less than 50%):  | 0.0%   | PASS |

\* POND MEETS ALL DURATION DESIGN CRITERIA: PASS

# Flow Duration Plot





## STORM SEWER DESIGN (English Units)

This spreadsheet accomplishes a storm sewer design using the rational method. Enter the data in the grey shaded areas only.

S.R. 99

Designed By:  
Date:Luman Chet  
December 29, 2005

| Drain Design |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        | Drain Profile          |                        |              |                                 |                                   | Remarks           | Pipe Cover<br>Upstr.cover | Pipe Cover<br>Dwnstr.cover                   |      |      |
|--------------|---------------------------------------------|-------------------------------------------------------|-----------------------------------------|----------------------|-------------------------------------|------------------------|-------------------|--------------------------|-------------------------|------------------------|------------------------|------------------------|--------------|---------------------------------|-----------------------------------|-------------------|---------------------------|----------------------------------------------|------|------|
| A            | T <sub>1</sub> to<br>col2<br>Sta.<br>(min.) | m =<br>Total T <sub>1</sub> to Col2<br>Sta. ** (min.) | n =<br>Rainfall<br>Intensity<br>(in/hr) | 0.54<br>Runoff (cfs) | 0.54<br>Contrib.<br>Inflow<br>(cfs) | Total<br>Flow<br>(cfs) | Pipe Dia.<br>(in) | Pipe<br>Slope<br>(ft/ft) | Flow Velocity<br>(ft/s) | Pipe Capacity<br>(cfs) | Pipe Capacity<br>(cfs) | Pipe<br>Length<br>(ft) | Elev. Change | Upstream<br>CB Top<br>Elevation | Downstream<br>CB Top<br>Elevation | Upstr<br>Flowline | Downstr<br>Flowline       |                                              |      |      |
| 1            | 2                                           | 3                                                     | 4                                       | 5                    | 6                                   | 7                      | 8                 | 9                        | 10                      | 11                     | 12                     | 13                     | 14           | 15                              | 16                                | 17                | 18                        | 19                                           | 20   | 21   |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.33                 | 0.00                                | 0.33                   | 12.00             | 0.0200                   | 6.95                    | design is completed    | 5.46                   | 210.00                 | 4.20         | 322.11                          | 317.95                            | 318.04            | 313.84                    |                                              | 2.00 | 2.04 |
|              | 5                                           | 5.50                                                  | 2.76                                    | 0.94                 | 0.00                                | 0.94                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 200.00                 | 5.00         | 317.95                          | 313.20                            | 313.84            | 308.84                    |                                              | 2.04 | 2.29 |
|              | 5                                           | 5.93                                                  | 2.65                                    | 1.41                 | 0.00                                | 1.41                   | 12.00             | 0.0200                   | 6.95                    | design is completed    | 5.46                   | 100.00                 | 2.00         | 313.20                          | 311.08                            | 308.84            | 306.84                    |                                              | 2.29 | 2.15 |
|              | 5                                           | 6.17                                                  | 2.60                                    | 1.63                 | 0.00                                | 1.63                   | 12.00             | 0.0100                   | 4.91                    | design is completed    | 3.86                   | 20.00                  | 0.20         | 311.06                          | 310.86                            | 306.84            | 306.64                    |                                              | 2.15 | 2.15 |
|              | 5                                           | 6.24                                                  | 2.58                                    | 1.67                 | 0.00                                | 1.67                   | 12.00             | 0.0080                   | 4.39                    | design is completed    | 3.45                   | 88.00                  | 0.70         | 310.86                          | 310.18                            | 306.64            | 305.94                    | Flow into D1-27                              | 2.15 | 2.17 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.32                 | 0.00                                | 0.32                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 17.00                  | 0.43         | 322.83                          | 322.48                            | 318.76            | 318.34                    |                                              | 2.00 | 2.08 |
|              | 5                                           | 5.04                                                  | 2.90                                    | 0.38                 | 0.00                                | 0.38                   | 12.00             | 0.0215                   | 7.20                    | design is completed    | 5.66                   | 113.00                 | 2.43         | 322.48                          | 320.12                            | 318.34            | 315.91                    |                                              | 2.08 | 2.14 |
|              | 5                                           | 5.30                                                  | 2.82                                    | 0.71                 | 0.00                                | 0.71                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 191.00                 | 4.77         | 320.12                          | 315.33                            | 315.91            | 311.13                    |                                              | 2.14 | 2.13 |
|              | 5                                           | 5.71                                                  | 2.71                                    | 1.26                 | 0.00                                | 1.26                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 209.00                 | 5.23         | 315.33                          | 310.18                            | 311.13            | 305.91                    |                                              | 2.13 | 2.20 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 6.16                                                  | 2.60                                    | 1.84                 | 0.00                                | 1.84                   | 12.00             | 0.0182                   | 6.63                    | design is completed    | 5.21                   | 90.00                  | 1.84         | 310.18                          | 307.50                            | 305.91            | 304.27                    | Contribution flow from D1-26 RCSS Cl. V      | 2.20 | 1.16 |
|              | 5                                           | 6.38                                                  | 2.55                                    | 2.05                 | 0.00                                | 2.05                   | 12.00             | 0.0340                   | 9.06                    | design is completed    | 7.12                   | 60.00                  | 2.04         | 307.50                          | 305.46                            | 303.43            | 301.39                    |                                              | 2.00 | 2.00 |
|              | 5                                           | 6.49                                                  | 2.53                                    | 2.17                 | 0.00                                | 2.17                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 76.00                  | 1.90         | 305.46                          | 303.70                            | 301.39            | 299.49                    |                                              | 2.00 | 2.14 |
|              | 5                                           | 6.66                                                  | 2.49                                    | 2.52                 | 0.00                                | 2.52                   | 12.00             | 0.0320                   | 8.79                    | design is completed    | 6.90                   | 204.00                 | 6.53         | 303.70                          | 297.19                            | 299.49            | 292.96                    | Contribution flow from D1-38                 | 2.14 | 2.16 |
|              | 5                                           | 7.04                                                  | 2.42                                    | 2.57                 | 0.00                                | 2.57                   | 12.00             | 0.0350                   | 9.19                    | design is completed    | 7.22                   | 150.00                 | 5.25         | 297.19                          | 292.30                            | 292.96            | 287.71                    | Contribution flow from D1-42                 | 2.16 | 2.52 |
|              | 5                                           | 7.31                                                  | 2.37                                    | 2.89                 | 0.00                                | 2.89                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 38.00                  | 0.95         | 292.30                          |                                   | 287.71            | 286.76                    | Flow into the detention vault A              | 2.52 |      |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.63                 | 0.00                                | 0.63                   | 12.00             | 0.0320                   | 8.79                    | design is completed    | 6.90                   | 53.00                  | 1.70         | 305.38                          | 303.70                            | 301.31            | 299.61                    | Flow into D1-39                              | 2.00 | 2.02 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.45                 | 0.00                                | 0.45                   | 12.00             | 0.0400                   | 9.83                    | design is completed    | 7.72                   | 41.00                  | 1.84         | 298.80                          | 297.19                            | 294.73            | 293.09                    | Flow into D1-43                              | 2.00 | 2.03 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.44                 | 0.00                                | 0.44                   | 12.00             | 0.0200                   | 6.95                    | design is completed    | 5.46                   | 9.00                   | 0.18         | 293.55                          | 293.97                            | 289.48            | 289.30                    | Flow into control structure                  | 2.00 | 2.60 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 2.89                 | 0.00                                | 2.89                   | 18.00             | 0.0200                   | 9.10                    | design is completed    | 16.09                  | 55.00                  | 1.10         | 292.83                          |                                   | 283.24            | 282.14                    | Outfall (Calculated flow from D1-46 & D1-47) | 7.52 |      |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.73                 | 0.55                                | 1.28                   | 12.00             | 0.0320                   | 8.79                    | design is completed    | 6.90                   | 240.00                 | 7.68         | 285.48                          | 278.01                            | 281.41            | 273.73                    | Contribution flow from D2-1                  | 2.00 | 2.21 |
|              | 5                                           | 5.46                                                  | 2.78                                    | 1.52                 | 0.64                                | 2.16                   | 12.00             | 0.0350                   | 9.19                    | design is completed    | 7.22                   | 150.00                 | 5.25         | 278.01                          | 273.06                            | 273.73            | 268.48                    | Contribution flow from D2-5                  | 2.21 | 2.51 |
|              | 5                                           | 5.73                                                  | 2.71                                    | 2.01                 | 0.37                                | 2.38                   | 12.00             | 0.0300                   | 8.51                    | design is completed    | 6.66                   | 25.00                  | 0.75         | 273.06                          | 271.85                            | 268.48            | 267.73                    | Contribution flow from D2-9                  | 2.51 | 2.05 |
|              | 5                                           | 5.78                                                  | 2.69                                    | 2.08                 | 0.00                                | 2.08                   | 12.00             | 0.0320                   | 8.79                    | design is completed    | 6.90                   | 265.00                 | 8.48         | 271.85                          | 263.66                            | 267.73            | 259.25                    |                                              | 2.05 | 2.34 |
|              | 5                                           | 6.28                                                  | 2.57                                    | 2.93                 | 0.61                                | 3.54                   | 12.00             | 0.0300                   | 8.51                    | design is completed    | 6.66                   | 185.00                 | 5.55         | 263.66                          | 257.95                            | 259.25            | 253.70                    | Contribution flow from D2-16                 | 2.34 | 2.18 |
|              | 5                                           | 6.64                                                  | 2.50                                    | 3.35                 | 0.49                                | 3.84                   | 12.00             | 0.0250                   | 7.77                    | design is completed    | 6.10                   | 5.00                   | 0.13         | 257.95                          | 258.83                            | 253.67            | 253.55                    | Contribution flow from D2-24                 | 2.21 | 3.22 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 6.64                                                  | 2.50                                    | 0.00                 | 3.84                                | 3.84                   | 12.00             | 0.0100                   | 4.91                    | design is completed    | 3.86                   | 100.00                 | 1.00         | 257.35                          | 253.90                            | 249.09            | 248.09                    | Calculated flow from D2-25                   | 6.19 | 3.74 |
|              | 5                                           | 6.65                                                  | 2.50                                    | 0.00                 | 3.84                                | 3.84                   | 18.00             | 0.0200                   | 9.10                    | design is completed    | 16.09                  | 97.00                  | 1.94         | 253.90                          | 250.00                            | 245.69            | 243.75                    | Cross culvert. Calculated flow from D2-30    | 6.14 | 4.18 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.55                 | 0.00                                | 0.55                   | 12.00             | 0.0320                   | 8.79                    | design is completed    | 6.90                   | 53.00                  | 1.70         | 287.18                          | 285.45                            | 283.11            | 281.41                    | Flow into D2-2                               | 2.00 | 1.97 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.64                 | 0.00                                | 0.64                   | 12.00             | 0.0300                   | 8.51                    | design is completed    | 6.66                   | 53.00                  | 1.59         | 279.51                          | 278.01                            | 275.44            | 273.85                    | Flow into D2-6                               | 2.00 | 2.09 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.37                 | 0.00                                | 0.37                   | 12.00             | 0.0400                   | 9.83                    | design is completed    | 7.72                   | 53.00                  | 2.12         | 275.16                          | 273.06                            | 271.11            | 268.99                    | Flow into D2-10                              | 2.00 | 2.00 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.61                 | 0.00                                | 0.61                   | 12.00             | 0.0400                   | 9.83                    | design is completed    | 7.72                   | 53.00                  | 2.12         | 265.71                          | 263.66                            | 261.64            | 259.52                    | Flow into D2-18                              | 2.00 | 2.07 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.49                 | 0.00                                | 0.49                   | 12.00             | 0.0400                   | 9.83                    | design is completed    | 7.72                   | 53.00                  | 2.12         | 259.95                          | 257.95                            | 255.88            | 253.76                    | Flow into D2-25                              | 2.00 | 2.12 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 6.65                                                  | 2.50                                    | 0.58                 | 0.52                                | 1.11                   | 12.00             | 0.0150                   | 6.02                    | design is completed    | 4.73                   | 120.00                 | 1.80         | 252.53                          | 251.18                            | 248.46            | 246.66                    | Contribution flow from D2-39                 | 2.00 | 2.45 |
|              | 5                                           | 6.98                                                  | 2.43                                    | 0.91                 | 0.33                                | 1.24                   | 12.00             | 0.0050                   | 3.47                    | design is completed    | 2.72                   | 160.00                 | 0.80         | 251.18                          | 250.22                            | 246.66            | 245.86                    | Contribution flow from D2-42                 | 2.45 | 2.29 |
|              | 5                                           | 7.75                                                  | 2.30                                    | 1.31                 | 0.00                                | 1.31                   | 12.00             | 0.0055                   | 3.64                    | design is completed    | 2.96                   | 160.00                 | 0.88         | 250.22                          | 249.25                            | 245.86            | 244.98                    |                                              | 2.29 | 2.20 |
|              | 5                                           | 8.48                                                  | 2.19                                    | 1.59                 | 0.00                                | 1.59                   | 12.00             | 0.0100                   | 4.91                    | design is completed    | 3.86                   | 73.00                  | 0.73         | 249.25                          | 248.55                            | 244.98            | 244.25                    |                                              | 2.20 | 2.23 |
|              | 5                                           | 8.48                                                  | 2.19                                    | 1.59                 | 0.38                                | 1.97                   | 18.00             | 0.0050                   | 4.55                    | design is completed    | 3.64                   | 87.00                  | 2.58         | 248.99                          | 249.48                            | 243.88            | 241.30                    | Contribution flow from D3-13                 | 3.04 | 6.11 |
|              | 5                                           | 8.73                                                  | 2.16                                    | 1.56                 | 0.57                                | 2.13                   | 18.00             | 0.0091                   | 5.14                    | design is completed    | 3.94                   | 86.00                  | 0.62         | 249.48                          | 244.26                            | 241.30            | 240.68                    | Contribution flow from D3-14 Outfall 5       | 6.11 | 1.51 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.52                 | 0.00                                | 0.52                   | 12.00             | 0.0350                   | 9.19                    | design is completed    | 7.22                   | 51.70                  | 1.81         | 254.27                          | 252.53                            | 250.20            | 248.39                    | Flow into D2-40                              | 2.00 | 2.07 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.33                 | 0.00                                | 0.33                   | 12.00             | 0.0300                   | 8.51                    | design is completed    | 6.66                   | 50.00                  | 1.50         | 252.56                          | 251.18                            | 248.49            | 246.99                    | Flow into D2-43                              | 2.00 | 2.12 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.38                 | 0.00                                | 0.38                   | 12.00             | 0.0050                   | 3.47                    | design is completed    | 2.72                   | 61.00                  | 0.31         | 248.77                          | 248.99                            | 244.70            | 244.40                    | Flow into D3-13                              | 2.00 | 2.53 |
|              |                                             |                                                       |                                         |                      |                                     |                        |                   |                          |                         |                        |                        |                        |              |                                 |                                   |                   |                           |                                              |      |      |
|              | 5                                           | 5.00                                                  | 2.91                                    | 0.57                 | 0.00                                | 0.57                   | 12.00             | 0.0075                   | 4.25                    | design is completed    | 3.24                   | 109.00                 | 0.82         | 248.83                          | 249.48                            | 244.76            | 243.94                    | Flow into D3-7                               | 2.00 | 3.47 |



|   |      |      |      |      |      |       |        |      |                     |      |        |      |        |        |        |        |                                          |      |      |
|---|------|------|------|------|------|-------|--------|------|---------------------|------|--------|------|--------|--------|--------|--------|------------------------------------------|------|------|
| 5 | 5.00 | 2.91 | 0.58 | 0.00 | 0.56 | 12.00 | 0.0050 | 3.47 | design is completed | 2.76 | 145.00 | 0.74 | 248.36 | 247.44 | 245.09 | 244.35 | R.C.S.S.P. Cl. 5                         | 1.20 | 1.02 |
| 5 | 5.69 | 2.72 | 0.93 | 0.00 | 0.93 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 140.00 | 0.70 | 247.44 | 247.08 | 244.35 | 243.85 | R.C.S.S.P. Cl. 5                         | 1.02 | 1.36 |
| 5 | 6.36 | 2.56 | 1.25 | 0.00 | 1.25 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 150.00 | 0.75 | 247.08 | 246.35 | 243.85 | 242.90 | R.C.S.S.P. Cl. 5                         | 1.36 | 1.38 |
| 5 | 7.08 | 2.41 | 1.57 | 0.00 | 1.57 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 150.00 | 0.75 | 246.35 | 245.42 | 242.90 | 242.15 | R.C.S.S.P. Cl. 5                         | 1.38 | 1.20 |
| 5 | 7.80 | 2.29 | 1.89 | 0.00 | 1.89 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 150.00 | 0.75 | 245.42 | 244.89 | 242.15 | 241.72 | R.C.S.S.P. Cl. 5                         | 1.20 | 1.10 |
| 5 | 8.22 | 2.23 | 2.31 | 0.00 | 2.31 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 135.00 | 0.18 | 244.89 | 244.06 | 241.72 | 241.54 | R.C.S.S.P. Cl. 5                         | 1.10 | 0.85 |
| 5 | 8.38 | 2.20 | 2.39 | 0.00 | 2.39 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 135.00 | 0.18 | 244.06 | 243.98 | 241.54 | 241.37 | R.C.S.S.P. Cl. 5                         | 0.85 | 0.54 |
| 5 | 8.55 | 2.18 | 2.37 | 0.00 | 2.37 | 12.00 | 0.0050 | 3.47 | design is completed | 2.73 | 119.00 | 0.04 | 243.98 | 244.07 | 241.37 | 241.32 | Connect to existing structure, Outfall 8 | 0.54 | 0.68 |

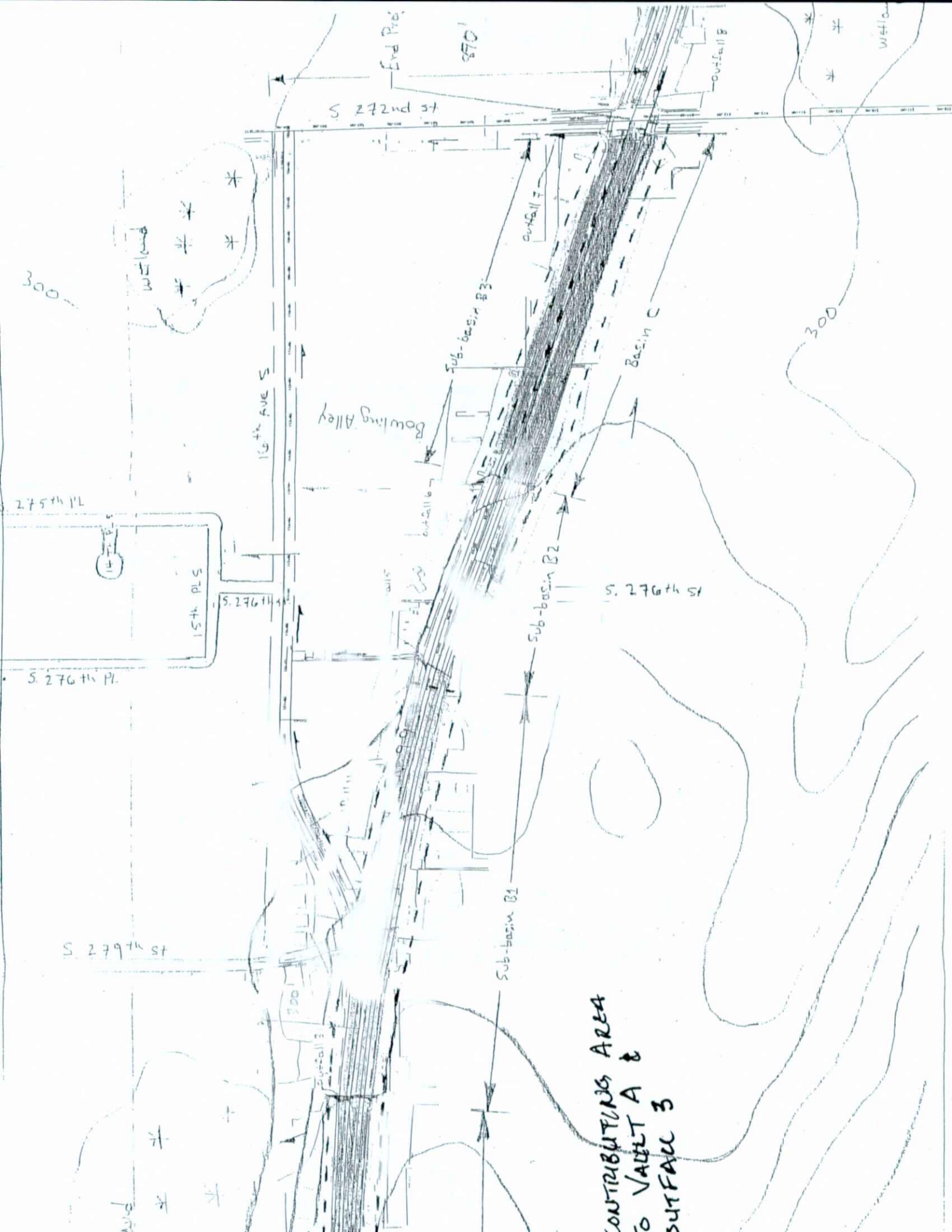
- time of concentration of the pipe is less than half full up to completely full
- assuming that the pipe is flowing less than half full up to completely full
- the pipe's length is the horizontal projection of the pipe, in feet, from centers of appurtenances

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| Drain Design |  |  |  |  |  |  |  |  |  | Drain Profile |  |  |  | Remarks    |          | Pipe Cover | Pipe Cover   |               |
|              |  |  |  |  |  |  |  |  |  | Flow Change   |  |  |  | Downstream | Upstr.   | Downstr.   | Upstr. cover | Dwnstr. cover |
|              |  |  |  |  |  |  |  |  |  | Flowline      |  |  |  | Flowline   | Flowline |            |              |               |
|              |  |  |  |  |  |  |  |  |  | Sewer         |  |  |  |            |          |            |              |               |
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|-------|-------|--------|------|---------------------|------|--------|------|--------|--------|--------|-------------------------------------------|
| 0.116 | 12.00 | 0.0274 | 8.13 | design is completed | 5.39 | 266.50 | 0.70 | 315.75 | 318.00 | 310.70 | Offsite runoff 1 at 283rd Street.         |
| 0.116 | 12.00 | 0.0274 | 8.13 | design is completed | 5.39 | 261.50 | 0.69 | 315.75 | 318.00 | 310.70 | Offsite runoff 2 (sta. 44+06 - 47' Right) |
| 0.116 | 12.00 | 0.0274 | 8.13 | design is completed | 5.39 | 105.00 | 0.69 | 308.60 | 310.00 | 299.00 | Offsite runoff 3 (sta. 46+98 - 47' Right) |
| 0.116 | 12.00 | 0.0354 | 9.24 | design is completed | 5.39 |        |      |        |        |        | Pipe crossing SR99 at 46+98               |

|      |      |
|------|------|
| 2.15 | 2.98 |
| 2.98 | 3.82 |
| 2.08 | 3.82 |
| 3.82 | 8.93 |

- time of concentration of the pipe is less than half full up to completely full
- assuming that the pipe is flowing less than half full up to completely full
- the pipe's length is the horizontal projection of the pipe, in feet, from centers of appurtenances



End Pk

970'

S 272nd St

Outfall B

Well

300

Well

16th Ave S

Bowling Alley

Sub-basin B3

Outfall 7

Basin C

300

275th Pl

S 274th Pl

S 276th St

S 276th Pl

S 276th St

Sub-basin B2

Sub-basin B1

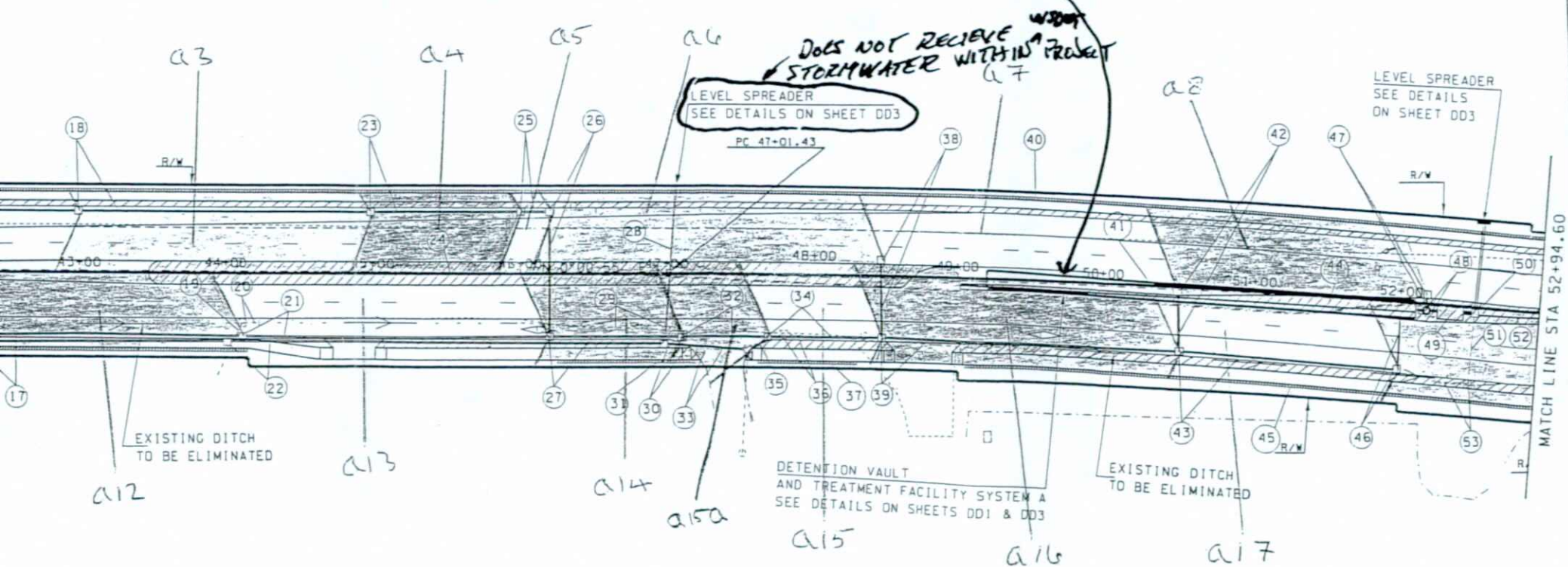
S 279th St

Outfall 3

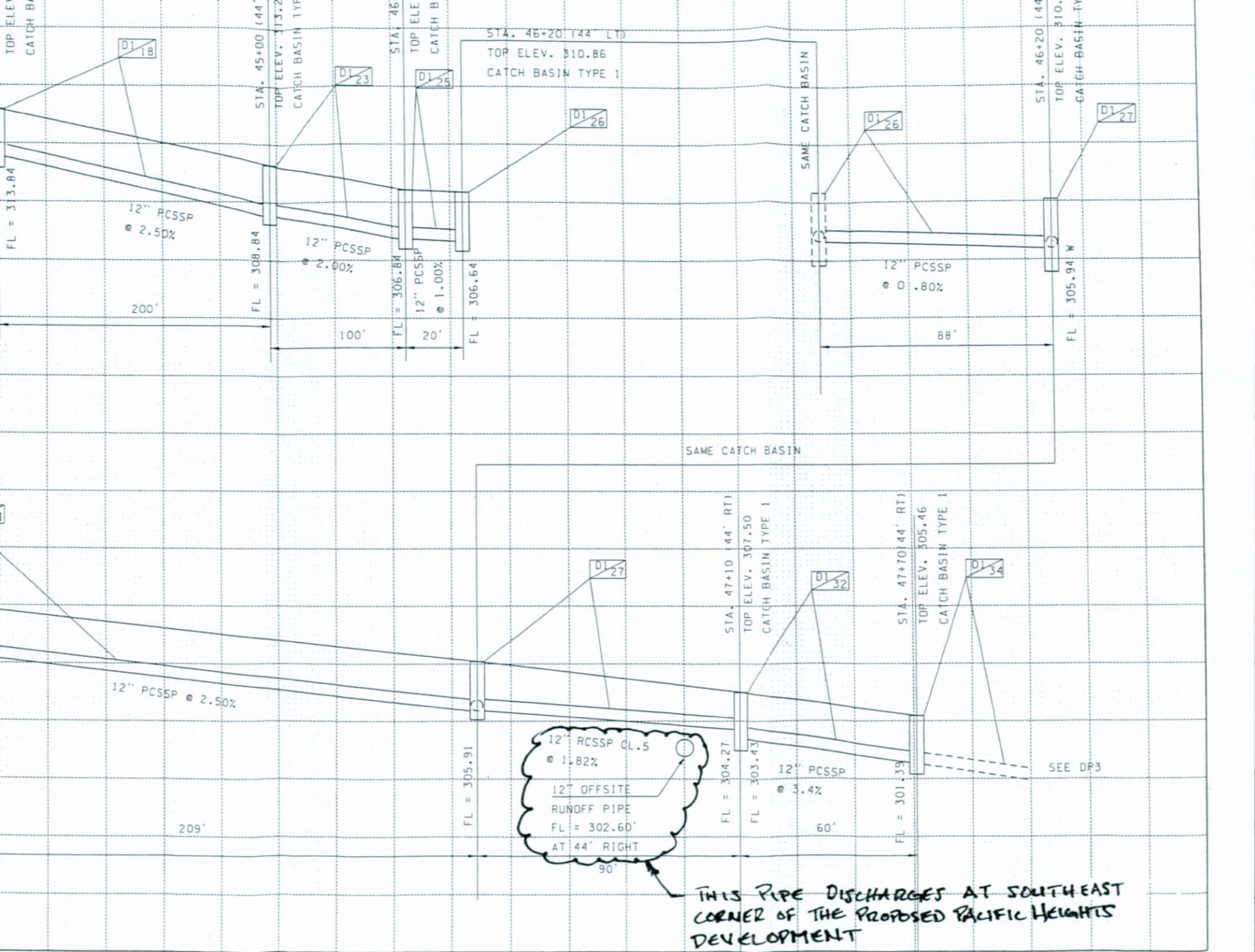
CONTRIBUTING AREA  
TO VAULT A &  
OUTFALL 3

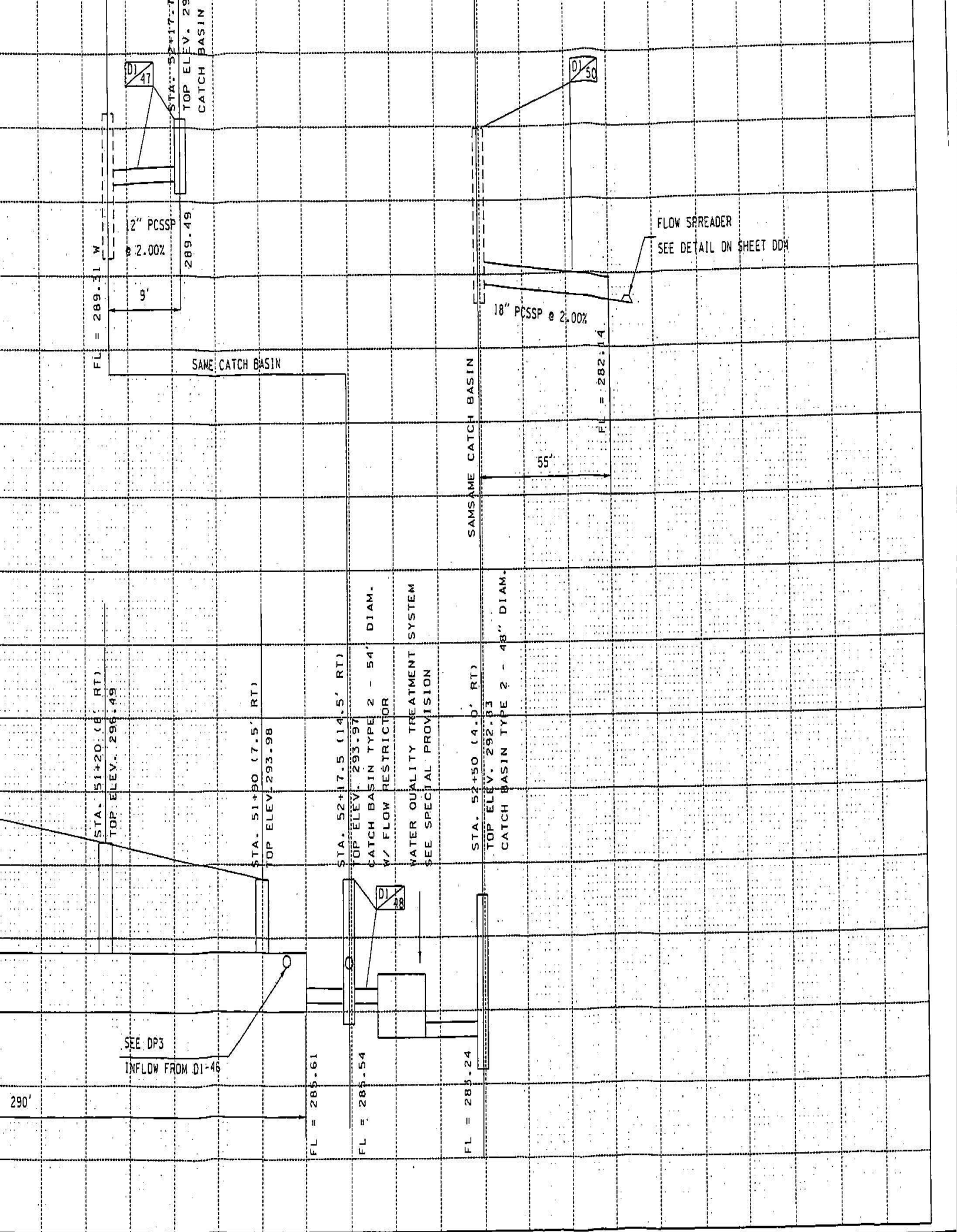
SUB-BASINS A1-17 → DETENTION VAULT A

# DETENTION VAULT A









OFFSET = 44.00'

EXISTING 8" SANITARY SEWER PIPE

F.L. = 300.42'

OFFSET = 39.00'

L = 105.00'

12" PCSSP  
@ 3.54%

FL = 299.00'

STA. 47+07 (58.00' LT)

FLOW SPREADER

SEE DETAILS ON SHEET D03

QUARRY SPALLS

SEE DETAILS ON SHEET

SAME CATCH BASIN

FL = 302.71'

STA. 44+06.50 (47.00' RT)

TOP ELEV. = 315.75

CATCH BASIN TYPE 1

D1 22

F.L. = 310.70

12" PCSSP  
@ 2.74%

291.50'

STA. 46+98 (47.00' RT)

TOP ELEV. = 308.60

GRATE INLET TYPE 1

D1 30

F.L. = 302.71

12" PCSSP  
@ 1.0%

59.0'

STA. 47+56 (51.63' RT)

TOP ELEV. 305.55

EXISTING CATCH BASIN

F.L. = 303.30

35

310

305

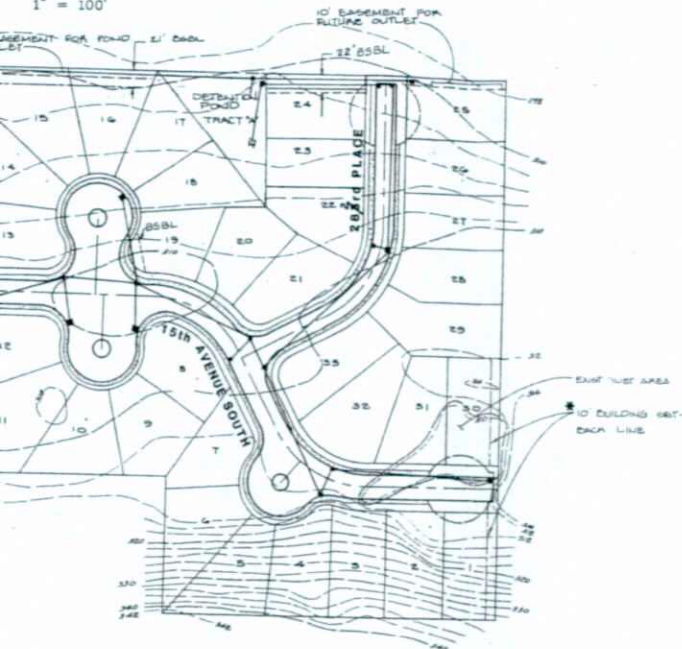
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B.A.L.D. FILE # 87-494

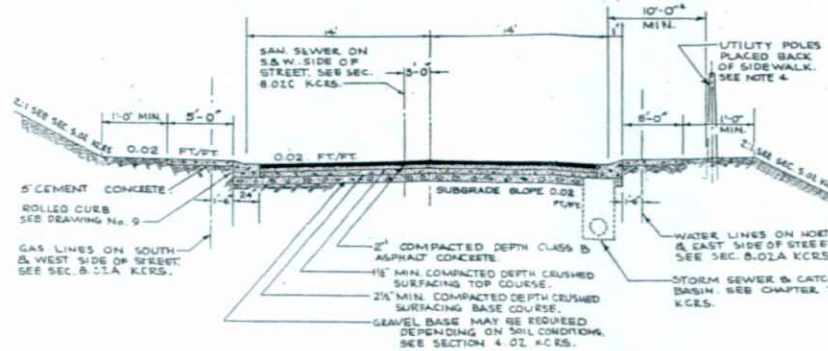


1" = 100'



\* BY RESTRICTION, NO STRUCTURE, FILL OR OBSTRUCTION INCLUDING, BUT NOT LIMITED TO, SEEDS, PATIOS, OUT-BUILDINGS OR OVERHANGS SHALL BE PERMITTED BEYOND THE 10 FEET AS SHOWN, UNLESS OTHERWISE APPROVED BY KING COUNTY SAN AND BALD.

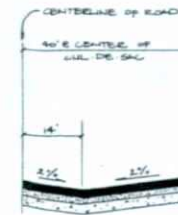
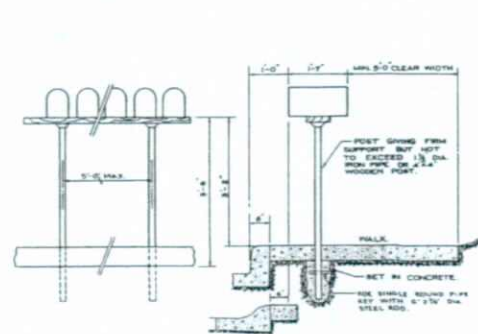
| SHEET INDEX |                                                  |
|-------------|--------------------------------------------------|
| NO.         | NAME                                             |
| 1           | COVER SHEET                                      |
| 2           | ROAD & STORM PLAN & PROFILE                      |
| 3           | ROAD & STORM DETAILS                             |
| 4           | TEMPORARY EROSION AND SEDIMENTATION CONTROL PLAN |

1 OF 4 South 284<sup>TH</sup> IMPROVEMENTS

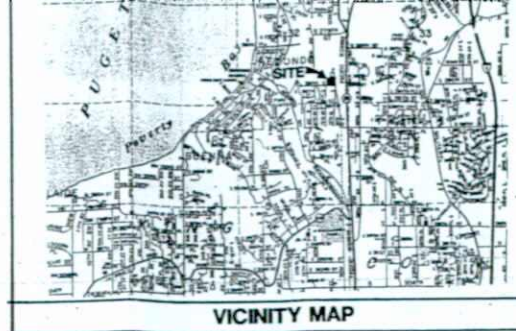
## NOTES:

1. THIS DRAWING ILLUSTRATES A TYPICAL ASPHALT CONCRETE SECTION, ALTERNATIVE 1. FOR OTHER ALTERNATIVES AND POSSIBLE REQUIREMENTS FOR INCREASED THICKNESS OF SURFACING MATERIALS, SEE SECTIONS 4.01 AND 4.02 KCRS.
2. GRADES:  
MINIMUM 0.5%  
MAXIMUM SEE SECS. 2.03 & 2.09 KCRS

3. FOR WIDTHS OF PAVEMENT AND RIGHT-OF-WAY, SEE SEC. 2.03 KCRS.
4. FOR CLEARANCE OF UTILITY POLES SEE SEC. 8.020 & DMG. NO. 15 KCRS.

TYPICAL ROADWAY SECTION W/ ROLLED CURB  
15th AVE. SOUTH & 283rd PLACETEMPORARY  
CUL-DE-SAC  
1" = 20'MAIL BOX MOUNTING DETAIL  
NOTES:

- NOTES:
1. SEE SEC. 2.07 KCRS.
  2. ISLAND AT CENTER OF BULB SHALL HAVE VERTICAL CURB. SEE DRAWING NO. 9



VICINITY MAP

| DESIGN   | DATE     | REVISION DESCRIPTION | REV | NO |
|----------|----------|----------------------|-----|----|
| DRAWN    | 12/10/87 |                      |     |    |
| CHECKED  |          |                      |     |    |
| SEC      | 12/10/87 |                      |     |    |
| FIELD BK | 12/10/87 |                      |     |    |
| SCALE    | 12/10/87 |                      |     |    |



TITLE  
COVER SHEET  
APPLEWOOD

CLIENT  
HERITAGE LAND DEVELOPMENT  
10011 86th STREET EAST  
PULLMAN, WA 99130 (509) 848-1887

PAC-TECH  
ENGINEERING, INC  
2801 SOUTH 35TH STREET, SUITE 300  
TACOMA, WASHINGTON 98409 (206) 473-4481  
3721 KITSAP WAY, SUITE 4  
BREMERTON, WASHINGTON 98312 (206) 377-2883  
SEATTLE 823-5728



NUMBER  
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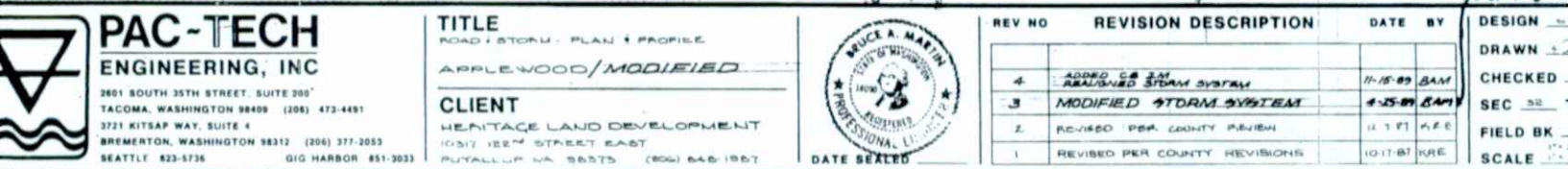
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Apple Wood











**LEVEL II DOWNSTREAM REPORT**

**ADDENDUM:**

**TOTAL FLOW QUANTITIES AND CHANNEL VELOCITIES**

**PACIFIC PLACE**

**LOCATED AT PACIFIC HIGHWAY SOUTH**

**AND 282<sup>ND</sup> PLACE**

**KING COUNTY, STATE OF WASHINGTON**

Our Job No. 9765  
Dated: June 8, 1998

**Prepared By:**

Dana B. Mower, P.E.  
DBM Consulting Engineers  
502 16<sup>th</sup> Street, N.E., Suite 312  
Auburn, Washington 98002  
Phone: (206) 887-0924

Civil Engineering, Land Planning, Surveying, Environmental Services

## **I. INTRODUCTION**

The proposed Pacific Place Condominium project is approximately 102 condominium units on the west side of Pacific Highway between 279<sup>th</sup> Street and 284<sup>th</sup> Street. The project site is approximately 12-acres and square. The general topography of this site slopes to the west with varying slopes from 40% to 50%. Two wetlands are located on site. One wetland is located in the center of the site, and the second is on the western boundary of the site.

The proposed storm drainage system would collect the storm water from the developed areas of the project and route it to a three cell wet pond/detention pond in the southwest corner of the site. The wet pond would discharge through a biofiltration swale and out-falls at the southwest corner of the project. In general, drainage from the project follows a natural drainage ravine flowing to the southwest for approximately 1/3-mile and then enters a culvert under Redondo Way South, near the intersection with Marine View Drive South. This storm drainage system flows to the west along Redondo Way South and discharges into the ocean approximately 600' to 700' from the intake. Please see the enclosed drainage route map in the appendix for the drainage path.

## **II. SUMMARY OF DRAINAGE BASIN DOCUMENTS**

The proposed project and its drainage path lie within the South Section of the Lower Puget Sound Basin. The project's downstream drainage path is not mapped in the Hylebos Creek and Lower Puget Sound Basin Current and Future Condition Report, the Basin Reconnaissance Program Summery, or the Proposed Basin Plan for Hylebos Creek and the Lower Puget Sound. However, the downstream path shows up as an unclassified stream on the King County Sensitive Areas Stream and Flood Plain maps. The King County Sensitive Areas maps indicate that the downstream path flows through erosion and landslide hazard areas. The pertinent maps from these reports are enclosed in the appendix.

## **III. LEVEL II DOWNSTREAM FIELD OBSERVATIONS AND ANALYSIS**

On March 27, 1998, Barnaby D. Hoit conducted a field observation of the downstream drainage path from the Pacific Place proposal. This observation included walking the entire drainage path from Pacific Place to the discharge point in the Puget Sound and field measurements of the drainage channel using an inclinometer, hand tape and measuring wheel. The downstream path was photographed at many points. Using these field measurements, observations and photographs, the channel conditions and capacity were evaluated. The channel capacity was modeled using the Manning equation. The Offsite Drainage Systems Table, in the appendix, summarizes the observed drainage conditions and calculated capacities. The approximate downstream route is shown on both an assessor's map and Ariel topographic map (1" = 200' and 5' contours) obtained from King County.

### **1. DISCHARGE FROM WESTERN WETLAND**



The wetland located on the west of the project site, drains to an approximately 8" diameter concrete pipe set in the northeast corner of the Garrity residence, directly to the west of the project site. This parcel is indicated in the assessor's map in the appendix. In discussion with residents, it was determined that this pipe was installed to convey the drainage that flowed through the backyard. The pipe drains across the back yard to the southwest. However, the residents claimed the yard still flooded during the rainy season, but did not substantiate this claim with any documentation. No documentation of this drainage complaint was noted in the drainage complaints on-file with King County.

## **2. PROPOSED PROJECT DISCHARGE**

The biofiltration swale and detention facility would discharge at the southwest corner of the project site. This is located approximately 200' south of the second wetland's discharge. The drainage path from the corner of the project site is approximately to the west, through shallow, natural swales and has no distinct channel. The downstream property is vacant with dense trees and under brush. There was no evidence of erosion and the flow paths were well stabilized with vegetation. The discharge would join the drainage channel at approximately point C.

## **3. DRAINAGE POINT A**

As can be seen on the drainage path maps in the appendix, the defined drainage channel begins to the southwest of the Garrity residence. Two pipes discharge to the head of the drainage channel. The drainage pipe through the Garrity's back yard appears to exit as an 10" corrugated plastic pipe. Also, an approximately 4" diameter corrugated plastic pipe discharges to the channel. These pipes can be seen in the photograph labeled A1. The channel is approximately 2½' deep and 3' wide at the bottom with steep side slopes. The channel is incised in the earth with some weeds and vegetation growing on the banks of the channel. On the day of the observation, the water was flowing several inches deep. The channel slope was approximately 3%. The channel is sharply defined, and has little vegetation, but does not appear to be subject to erosion. The channel base had some gravel. No evidence of flooding was visible. Photograph A2 shows the channel looking downstream from Point A. Between drainage point A and B an approximately 12" drainage pipe, apparently draining from 13<sup>th</sup> Avenue South, discharges to the channel.

## **4. DRAINAGE POINT B**

Drainage point B, as indicated on the downstream drainage map, is located directly to the south of the dead-end of 13<sup>th</sup> Avenue South. A footpath from the dead-end of 13<sup>th</sup> Avenue South passes over the drainage ravine at this point. The drainage channel is approximately 1' deep and 2' wide at the bottom with a gravel base and shallow side slopes. The channel is not yet within a well-defined ravine. However, it is depressed from the surrounding area such that a flood stage would have to be many feet high before flooding any adjacent property, homes or roads. There was no evidence of flooding or erosion in the channel at this point. The channel has a 5% slope and drains to the southwest. The channel is shown in photograph B1.

## **5. DRAINAGE POINT C**

Drainage point C, as indicated on the downstream drainage map, is approximately 100' downstream from point B. The channel is fairly typical for next several hundred feet—an



approximately 3' wide channel with about a 1' ordinary high water mark and steep banks. The channel has a gravel base mixed with larger rocks, cobbles and some debris. The channel slope is approximately 15%. The channel is located towards the bottom of a deepening ravine that is approximately 20' to 30' deep at this point. There was no evidence of erosion or flooding. Photograph C1 shows the upstream channel and photograph C2 shows the downstream channel from point C. Photograph C3 shows the likely route the proposal's drainage would take down to point C.

## **6. DRAINAGE POINT D**

Drainage point D, at approximately 600' downstream from the beginning of the channel, is a notable drainage feature. The drainage drops about twenty vertical feet at a natural waterfall. Photographs D3 and D4 show the waterfall's top and base, respectively. The south side of the channel, below the fall, is a nearly vertical shear face of exposed glacial till rising approximately 75' to 100' with little vegetation. This shear face can be seen in photograph D2 from the northern bank. The north side of the channel is a steep (approximately 2:1) embankment rising approximately 100'. The waterfall base is located within a bowl created by the steep slopes to all sides. This bowl is probably subject to ponding during heavy rain events. The channel immediately upstream (photo D1) and downstream (photo D5) of the waterfall is similar—an approximately 3' wide channel with 1' or deeper ordinary high-water mark and 15% slope. The base of the channel immediately before and after the waterfall is gravel with some larger stones and organic debris in the drainage ravine.

The natural waterfall is a geological feature, probably a result of differently glacial deposition. The channel and fall appear stable and consist of glacial till with large portions of gravel and well consolidated finer material resistant to erosion forces. The nearly vertical faces of the waterfall and southern bank evidence the cohesive nature of the soils. The vegetation along the shear southern bank has roots overhanging in the air, indicating that material has sloughed from the slope face at some point. This sloughing is probably related to the slope stability of the nearly vertical face, and drainage from the ridgeline above the shear face. Erosion in the channel bed is probably minimal because the bed is resting on a gravel and larger stone base. Occasional sloughing from the shear face may add sediment load to the channel, which would then be conveyed downstream by the relatively rapid flow velocities.

## **7. DRAINAGE POINT E**

At drainage point E, approximately 200' downstream from the waterfall, the channel is located in a steep ravine and has broad banks approximately 20' wide. The channel is approximately 3' wide with at least a 1' deep high water mark. The channel is lined with gravel mixed with cobbles and occasionally larger boulders. The channel also contains large organic debris. The channel slope is approximately 20%. Photograph E1 shows the channel. As the channel proceeds approximately another 500' to the arch culvert (drainage point C), it flattens and spreads out into a marshy area with a poorly defined channel. The channel is still contained in a deep ravine. There is no evidence of excessive erosion or flooding in these sections of the channel.

## **8. DRAINAGE POINT F**



At drainage point F, the drainage channel has flattened out and is characterized by an approximately 3' or wider channel with approximately 1' ordinary high water mark and gentle side slopes. The channel is earthen at this point with some weeds and very few debris located in the channel. Photograph F1 shows the channel. As this channel approaches Redondo Way, it joins with drainage from the north side of Redondo Way and the tight lined drainage from the Applewood Subdivision located just to the south of the proposed Pacific Place condominium project. The tight line drainage from the Apple Wood project drains down a Drisco pipe and discharges to a shallow gabbion outfall structure approximately 100' up from the arch culvert underneath Redondo Way (point D). There is no evidence of excessive erosion at this point in the channel. There may be some ponding in this region during high flow events, or a higher water stage than is suggested by the defined channel. There does not appear to be any immediate flooding potential as shoulder on Redondo Way is several feet high.

#### **9. DRAINAGE POINT G**

Drainage point G, as indicated on the drainage map, is located just to the southeast of the intersection of Redondo Way and Marine View Drive. This Arch culvert, under Redondo Way, is the first structure within the drainage path from the proposed project and is approximately 1/3 of a mile from the proposed project. The arch culvert is approximately 28" high by 42" wide and the entrance is rock armored. The culvert can be seen in the enclosed photograph G1.

#### **10. DRAINAGE FROM POINT G TO OUTFALL AT POINT H**

After point G, according to drainage plan drawings provided to us by the City of Des Moines, the arch culvert crosses Redondo Way to a manhole in a condominium project (Redondo Heights). This manhole, as can be seen on plans in the appendix, collects drainage from a variety of sources - including Redondo Creek, which flows along the southwest side of Redondo Way. The drainage proceeds through a 36" pipe to the northwest along Redondo Way and discharges into the Puget Sound through a concrete pipe as shown on photograph H2. Photograph H1 shows the view upstream from the discharge point in the seawall. According to the City of Des Moines, there have been a number of complaints regarding drainage problems within this condominium project. These problems appear to be associated primarily with the intake from the Redondo Creek. The creek used to drain to a detention pond that was displaced by the condominium parking lot.

### **DOWNSTREAM CAPACITY CALCULATIONS**

Enclosed in the appendix are calculations estimating the downstream capacity for the drainage ravine and the arch culvert passing underneath Redondo Way South. In general, the capacity of the downstream drainage path has been estimated conservatively, based on maximum flow depth to the estimated high water mark, as observed in the field. Throughout the channel from the proposed project down to Redondo Way, there is additional capacity because the channel is located within a deep ravine, with a restraining topography around any flood plain. Because gravel and cobbles typically line the channel and the banks are stabilized by vegetation, there is very low erosion potential. The typical channel capacity calculated for the downstream drainage is approximately 50cfs.



## CONCLUSIONS

The downstream drainage path in the Pacific Place project shows adequate capacity for at least 1/3 of a mile through the existing drainage ravine. There are no signs of excessive erosion or capacity problems apparent downstream of the project site. The drainage pipe through the backyard of the Garrity property may indeed be undersized but this is an existing problem and will not be aggravated by the proposed project that will drain to the south of the Garrity residence. Existing drainage from the second wetland on the west side of the project site will be maintained as it currently exists. It is difficult to quantify the entire drainage passing into the ravine due to the presence of pipes from 13<sup>th</sup> Avenue South discharging through the ravine. The culvert located underneath Redondo Way South appears to have adequate capacity and not have any flooding potential. The road is located several feet above the top of the culvert allowing for a great deal of backwater prior to any flooding occurring.

The drainage route through the pipes beneath the condominium project and along Redondo Way appears to be sized for significant flows with 36" diameter pipes. Existing flooding problems and drainage problems associated with the area appear to be related to drainage other than the drainage from our proposed project and its drainage basin. The outfall into Puget Sound does not appear to have any problems associated with it and to be in good repair.

The natural waterfall appears to be a stable with the exposed glacial till forming a durable surface and the drainage, both upstream and downstream from the fall, resting upon gravel and large cobbles with little erosion potential. There does not appear to be much established vegetation on the shear slope of the waterfall and hanging roots exposed to the air along the crest of the ravine suggests some sloughing on this exposed face. This sloughing is probably related to slope stability on the shear face and drainage above along the crest of the ravine, not erosion at the base.

The Technical Information Report (T.I.R.) prepared for the proposed project describes the stormwater design and provides the supporting calculations. The downstream channel does not show any signs of significant flooding or erosion problems, but the stormwater release rates proposed will reduce downstream impacts below the existing conditions. Particularly, the allowed release rates will be 1/2 of the existing 2-yr storm discharge during the 2-yr storm, the existing 10-yr storm discharge during the 10-yr storm, and the existing 100-yr discharge during the 100-yr storm. By reducing the release rate during typical storms (the 2-yr storm) the typical velocities in the downstream channel are reduced. This tends to reduce long term erosion of the channel and is the stream protection standard. The proposed projects allowed release rates are 0.04 cfs for the 2-yr storm, 0.36 cfs for the 10-yr storm, and 0.83 cfs for the 100-yr storm. These release rates are minor flow rates compared to the existing channel capacity that is a couple orders of magnitude larger. The proposed project will not adversely impact the downstream conveyances, and will actually reduce downstream flows for typical storms.

## RECOMMENDATIONS

The proposed Pacific Place Project should meet the stormwater design requirements established by the King County Surface Water Design Manual and the Department of Development and Environmental Services (DDES). No downstream erosion or capacity problems were apparent that would require unusual design requirements. Due to the potentially sensitive nature of the marine ecology at the outfall of the drainage path, it will be important to provide and maintain



proper stormwater quality facilities on the proposed project such as the wetpond and the biofiltration system proposed.

DBM Consulting Engineers recommends that the drainage problems associated with the Redondo Heights condominium, at the intersection of Sound View Drive and Redondo Way be investigated further by the jurisdictional agency (City of Des Moines). These problems do not appear to be related to the drainage from the proposed project and are an existing problem probably aggravated by the construction of the condominium facilities. It appears that a regional tributary (Redondo Creek) flows through this drainage system. Repair and maintenance of those facilities are a regional concern.

9765c.018L2

## APPENDIX

- EXHIBIT A - VICINITY MAP
- EXHIBIT B - DOWNSTREAM MAP BASED ON KING COUNTY ARIEL TOPOGRAPHY  
MAP & ASSESSORS MAP WITH DOWNSTREAM PATH
- EXHIBIT C - LARGE SCALE TOPOGRAPHY MAP OF LAST HALF OF OPEN DRAINAGE  
CHANNEL.

# DBM CONSULTING ENGINEERS

CIVIL ENGINEERING DESIGN • LAND PLANNING • SURVEYING  
ENVIRONMENTAL SERVICES

July 23, 1998

Mr. Will Mansfield  
DDES  
900 Oaksdale Ave. SW  
Renton, WA 98005

RE: Additional response to stormwater issues per our letter dated June 8, 1998 as applicable to Pacific Place Townhouse project located 28005 Pacific Highway South. Our Job no. 9765.1

Dear Will:

This letter is a follow up to our June 1998, letter concerning the Pacific Place project.

Subsequent to our June 8, 1998 letter, we were provided a field topographic survey of the offsite areas, as addressed, from Eastside Consultants. We received this topographic survey on June 11, 1998, several days after our initial letter to you.

We are attaching a copy of the topographic survey map for your use. Based on this topographic survey map, we would like to modify the conclusions set forth in our letter to you, as follows:

1. Our initial letter indicated an eight-inch concrete inlet pipe existed adjacent to the westerly property line of the Pacific Place project. You can see on the attached map, this line continues as an eight-inch line to its outlet, for a distance of approximately 130 feet. The slope on this eight inch concrete pipe is 0.5 percent. The carrying capacity of the pipe under a no headwater condition is approximately 0.5 cfs.
2. We indicated in our letter, this eight-inch pipe could flow approximately 1.4cfs. with a headwater condition of approximately 20 inches. We also indicated, we thought the initial stretch of pipe was constructed of a mixed size pipe with a twelve-inch pipe at the outlet.

In fact, the system has been constructed with 130 feet of eight-inch pipe and is broken by an open pond area approximately 8 feet in diameter near the existing carport on the adjacent property. A ten-inch CPEP pipe has been constructed underneath the carport slab for a distance of approximately seventy-five feet and discharges off the site. This pipe as surveyed, is essentially flat.

3. The carrying capacity of the ten-inch CPEP pipe will be solely a function of headwater condition. We estimate neither a 130 feet of eight inch pipe with a slope of 0.15 percent, nor the ten-inch CPEP at a zero percent slope would be able to have a carrying capacity equal to the 1.4cf target flow for this project.

March 29, 1999

4. Based on the restrictions noted on the actual topographic survey, it does not appear as though the system constructed offsite, meets county specifications. Therefore, we recommend the removal of this system, entirely, or the system should be reconstructed to accommodate the 100-year flow. We estimate the 100-year event would require at least an eighteen or twenty-four inch storm drainage pipe with the slope of approximately 0.5 percent or larger.
5. The topographic survey also shows a defined swale area near the southwest property corner. It is clear from the topographic survey map that storm drainage discharged at or near the southwest property corner would be released into an existing defined swale/channel, which would result in concentrated flow under existing conditions.

Therefore, it is our recommendation the county approve our original design. As you can see on the topographic survey, we would propose to move the discharge from the bioswale approximately fifty feet north of the southwest property corner so it would discharge directly within the existing defined channel. Although a scoured channel is not evident, it is clear from the topographic survey information a low lying defined drainage channel exists.

In addition, it is our opinion the two basins come together approximately 200 feet offsite of the project. Therefore, by discharging 100 percent of the post developed flow from this site, near the southwest property corner would be consistent with King County rules and regulations. It is also our opinion the topographic survey shows a concentrated flow discharge point exists on this site as well as the adjacent property. Therefore, there should be no restrictions on discharge for the entire site at a point fifty feet north of the existing property corner.

If you have any further questions, please do not hesitate to call.

Respectfully,

DANA B. MOWER, P.E.  
President

DBM:sz

Enclosure: Topographic Survey Map

9765.1c.010



DBM CONSULTING ENGINEERS

CIVIL ENGINEERING DESIGN • LAND PLANNING • SURVEYING  
ENVIRONMENTAL SERVICES

June 8, 1998

Will Mansfield  
DDES  
900 Oakesdale Ave SW  
Renton, WA 98055

RE: Response to Storm Water Issues from Letter Dated May 4, 1998, for Pacific Place Project  
Located at 28005 Pacific Highway South.  
Our Job No. 9765.1

Dear Will:

In your letter dated May 4, 1998, regarding the technical review of the Pacific Place Project, you requested several items related to the storm water design. Specifically, Item 3 requested an addendum to the level II offsite analysis with an estimate of the total flow quantities and velocities in the downstream drainage path. I have prepared these calculations and am submitting them with this letter for your review. The post-developed flow velocities will be slightly less than the pre-developed flow velocities due to the reduced release rates. In our opinion, adding additional storage requirements would not significantly reduce existing flow velocities in the channel. If complete retention was achieved and there was no release from the site, the velocities in the channel would be reduced 0.1 ft/sec. or less (see attached calculations).

A contributing drainage basin was delineated based on field observations and conservative assumptions. The total basin area is approximately 46 acres upstream of the site discharge point. The developed basins contributing to the project's detention pond were subtracted from this upstream drainage basin, leaving approximately 40 acres. An estimated additional 8 acres of area contributes along the ravine downstream of the site. A curve number of approximately 85 was assumed for the upstream drainage path prior to the point of discharge. This curve number was chosen to represent mixed land use including multi-family dwelling and individual single family units. The assumed soils type is Alderwood/Kitsap (type C). The downstream contributing basin was assumed to have a curve number of 81 representing forest with underbrush. The conservative assumption of no upstream detention was made for these calculations. Total flow rates were calculated based on these assumptions and approximate times of concentrations using the King County HYD program. These calculations are attached for your review.

The calculated flow rates were combined with the allowable release rates calculated for the site's detention pond. The allowable release rates are an order of magnitude smaller than the total basin discharge rates and have a minor impact on the downstream flow velocities. The allowable release rates are equal to (or less than for the 2-yr storm) initial discharge rates from the site. Also, actual release rates will be slightly lower due to the addition of the 30% safety factor to the detention

March 29, 1999

volume. A spreadsheet based on Manning's Equation was developed to analyze the flow at each representative channel cross section. The spreadsheet shows approximate flow depth and velocity for each storm event at the various channel sections. During the extreme storm events, flow velocities exceeding 5 ft/sec. are anticipated for the pre-developed condition. However, erosion resistant gravel and large rock line much of the downstream channel, which is typical for this type of reach. The calculations clearly show adequate downstream capacity in the channel. Maximum stage is approximately 0.8' deep for the 100-year storm event.

Please review the attached calculations, delineated drainage basins, and summary of flow velocities. If you have any questions regarding this analysis or conclusions, please do not hesitate to contact us at (253) 887-0924.

Respectfully,

Barnaby D. Hoit  
Project Engineer

BDH:sz  
Enclosure: Calculations  
9765.1c.006

**58.04.011 Authorization to enter upon any land or waters for purpose of resolving dispute.**

Any surveyor authorized by the court and the surveyor's employees may, without liability for trespass, enter upon any land or waters and remain there while performing the duties as required in RCW 58.04.001 through 58.04.007 and this section. The persons named in this section may, without liability for trespass, investigate, construct, or place a monument or reference monuments for the position of any land boundary mark or general land office corner or mark and subdivisional corners thereof. Persons entering lands under the authority of RCW 58.04.001 through 58.04.007 and this section must exercise due care not to damage property while on land or waters performing their duties, and are liable for property damage, if any, caused by their negligence or willful misconduct. Where practical, the persons named in this section must announce and identify themselves and their intention before entering upon private property in the performance of their duties. [1996 c 160 § 4.]

**58.04.015 Disturbing a survey monument—Penalty—Cost.**

A person who intentionally disturbs a survey monument placed by a surveyor in the performance of the surveyor's duties is guilty of a gross misdemeanor and is liable for the cost of the reestablishment. [1996 c 160 § 5.]



July 9, 1998

3. Discharge 100% of the by-pass system as well as 100% of the pond discharge system into the storm drainage pipe system recently constructed by the adjacent property owner. Our calculations indicated that in a 10-year storm, the water depth would need to be approximately twenty inches deep for this situation to occur.

I want to emphasize to you that our letter was based on visual observations of the offsite areas only. It is imperative that we be allowed to enter the adjacent property owner's property to complete a detailed downstream topographic survey for both discharge points. This is particularly critical for the pipe segment. Our assumption for the pipe segment was that it was a constant slope pipe from the inlet on the adjacent property to the outlet. This may or may not be the case. In addition, we saw a discrepancy between pipe materials and sizes at the inlet of the system and in the apparent outlet. The apparent outlet is a 12", N12, ADS pipe. It is not uncommon for property owners to mix and match pipe sizes and types for the type of installation that the homeowner completed in this case. However, without having an accurate survey of the pipe sizes, lengths, and slopes it is not possible to make an accurate, definitive statement regarding pipe capacity.

Again, our letter was for the sole purpose of moving forward with the SEPA determination on this property. We are convinced that based on our field observations that an acceptable off-site discharge is available on this property which can be designed, approved and constructed in accordance with King County codes. However, due to the lack of cooperation we have received from the adjacent property owners, they may attempt to stop you from discharging off-site, and you may need to litigate this issue under a worst case scenario. I want to emphasize to you that our plans are not yet approved by King County and until we complete the ground topographic survey, no final accurate determinations can be made in this regard.

To that end, I am attaching a copy of a recently passed RCW which applies to survey crews working on adjacent properties. We have had good luck showing this new RCW to adjacent property owners and inducing their cooperation with regard to allowing off-site surveys. You will note that in a worst case scenario, that a court order would be required to enter the off-site properties to complete the topographic survey that we need to make a final determination in this regard.

If you have any further questions, please do not hesitate to call.

Respectfully,



DANA B. MOWER, P.E.  
President

DBM:kl  
Enclosure  
9765.1c.009

DBM CONSULTING ENGINEERS

CIVIL ENGINEERING DESIGN • LAND PLANNING • SURVEYING  
ENVIRONMENTAL SERVICES

June 26, 1998

Mr. Will Mansfield  
King County DDES  
900 Oaksdale Avenue SW  
Renton, WA 98055-1219

RE: Offsite Stormwater Calculations for Alternative Discharge Point for Pacific Place.  
Our Job No. 9765

Dear Will:

In accordance with our recent meeting a few days ago, we would like to provide you with additional offsite storm drainage calculations for the alternative storm drainage discharge point we discussed.

In that meeting, we discussed discharging 100% from our storm detention pond for this property into the wetlands located along the westerly property line. As we noted during the meeting, an adjacent property owner appears to have constructed an 8" concrete pipe at the inlet adjacent to our property and a 12" ADS pipe at the outlet through their backyard for a distance of approximately 200 feet downstream. This has caused a downstream and offsite restriction which could negatively impact this property.

During our meeting, you indicated you wanted us to determine whether or not the existing 8" concrete and 12" ADS pipe recently constructed on the adjacent property would accommodate the 10-year release rate from our site. Our results are as follows:

Based on our field inspections (estimated), the existing 8" concrete and ADS pipe inlet is sloped at approximately 1.0%. The existing pipes represent a sharp-edged, projecting inlet control condition which, according to the King County Surface Water Design Manual, would allow an inlet capacity of approximately 1.3 cfs with a headwater condition of 1.0. Based on the pipe capacity at 1.0% slope, the internal pipe capacity would be approximately 1.4 cfs. In this situation, the inlet control would be the limiting factor regarding the capacity of the system, assuming the headwater condition is not allowed to go higher than 1.0 above the pipe diameter. If a higher headwater to diameter ratio is allowed, then the full 1.4 cfs capacity could be reached at 1.3 hw/d for a total depth of approximately 10.5 inches.

Based on our original design, the culvert in question on the adjacent property line serves as the offsite bypass discharge route for the project. The maximum calculated flow for this discharge point for the 10-year storm was determined to be approximately 2.06 cfs. This is based on our reservoir routing technique as well as an estimate of the pre-developed discharge capacity of the channel connecting the 3-acre wetlands to the wetlands located along the western property line.

- Should second construction entrance be considered.
- Show existing contours.

Sheet 15

- Show dewatering orifice in sediment pond outlet structure.
- Remove duplicate and outdated details.

TIR

- Include dewatering orifice calculations in TESC design.
- Verify volume of water quality pond. 6155 cu. Ft. is required.
- 30% safety factor required for detention volume (lateral).





King County  
Department of Development  
and Environmental Services

900 Oakesdale Avenue Southwest  
Renton, WA 98055-1219



May 4, 1998

Dana B. Mower  
DBM Consulting Engineers  
502 16<sup>th</sup> Ave. NE, Suite 312  
Auburn, WA 98002

King County Project Number: B97C0270  
Project Name: Pacific Place  
Project Address: 28005 Pacific Highway South

Dear Mr. Mower:

The DDES Site Engineering and Planning (SE&P) section has reviewed the site engineering plans for this permit application. The red marked plans can be picked up at the DDES office in the Site Engineering and Planning section.

In addition to the comments on the plans, the following comments must be addressed:

**Site Development**

1. 30% safety factor required for detention volume (lateral).
2. Verify outlet elevation of onsite wetland for proper placement of new outlet structure. Perform closed depression analysis, verifying that the developed site simulates the existing conditions.
3. Prepare an addendum to the Level II offsite analysis. Describe actual flow rates that could be anticipated for 2, 10, and 100 year storms. Based on the channel sections described in the previous report, determine the velocities to determine when, if any, erosive velocities occur. If there is a significant erosion problem, a stricter detention standard may need to be implemented.
4. Detention pond must outlet to a suitable discharge point. Sheet flow is only allowed for up to 0.5 cfs. Offsite easement(s) may need to be secured to outlet to existing channel.
5. Submit copy of recorded Declaration of Covenant with Exhibit A, private drainage easement(s) for conveyance of offsite flow, and Bond Quantity Worksheet.

May 4, 1998

**Traffic**

1. Traffic review is on hold pending review of the variance for roadway classification and resolution of site access issues.

**Landscaping/Zoning**

Comments not included in this letter.

All review comments in this letter and marked in red on the plans must be addressed before the plans can be approved. Due to the nature of the comments, further review may be necessary. Contact **Willis Mansfield, Site Development**, at 296-6744, **Fay Schafi, Traffic**, at 296-7228 or **David Baugh, Landscaping/Zoning**, at 296-7281 if you have any questions.

Submit two sets of corrected plans to the Commercial/Multifamily Permit Center, 900 Oakesdale Ave SW, Renton, WA 98055-1219. A copy of the architectural site plan and landscaping plan must be attached to each corrected set. The red marked plans must be returned with the revised plans. If the plans are ready for approval, an additional two sets of plans will be required to complete the permit package.

You must submit corrected plans by **June 21, 1998**. If we do not receive them by then, we will cancel this permit application per King County Ordinance 8184. To continue the project after that time will require a new permit application.

King County Code 9.04.100(D) requires that the applicant provide proof of liability insurance naming King County as an additional insured and identifying the specific project. KCC 9.04.100(D) does not require the insurance to issue the building permit, but requires it before the applicant can start construction. We have enclosed a Liability Insurance Requirement page with the red marked plans that describes the necessary insurance documentation. Contact **Narinder Walia, 296-7110, Financial Guarantee Management Unit** if you have any questions about this insurance requirement.

Sincerely,



Willis Mansfield, Engineer  
Site Engineering & Planning

cc: Building Permit File  
SE&P Project File  
Fay Schafi  
David Baugh  
Narinder Walia  
Loren Reinhold

B97C0270  
May 4, 1998

### **Pacific Place – SE&P Review Comments**

#### Sheet 6

- Structural design of retaining walls required for review. Rockery not allowed within 2:1 bearing plane of retaining wall

#### Sheet 8

- Show plan view of extension of 15<sup>th</sup> Ave. S.
- Pavement analysis required. Use WSDOT or AASHTO with CBR/R-value as determined by lab test and projected traffic counts

#### Sheet 10

- Maximum culvert length is 60 feet. Longer lengths required catch basins.
- 6" minimum vertical clearance between pipes.
- Pipe must be set back from building, outside a 1:1 slope from building footing.
- Private drainage easement for conveyance of offsite flow.
- Use catch basins, not inlets.
- Maximum overland flow between inlets is 300'. Additional catch basin may be required on left side of road.

#### Sheet 11

- Show detail of type I catch basin with standard and vaned grate for rolled curb.

#### Sheet 12

- Use larger scale or font for detail of dispersal trench. Include leveling board.

#### Sheet 13

- Include control structure in cross section of pond.
- Fence required for pond with 2:1 sideslopes.
- Include detail of CB#2 Type II. Include drain valve. Mechanism to be configured in such a way that flows are still forced to travel sequentially through the cells.

#### Sheet 14

- Pipe inlet and outlet to remain outside of flagged wetland areas.
- Swale runs through rock outfall.



9765.



King County  
Department of Development  
and Environmental Services  
Building Services Division  
900 Oakdale Avenue Southwest  
Renton, WA 98055-1219

March 31, 1998

Michael Reid  
Granville Southern, Inc.  
Post Office Box 2878  
Kirkland, WA 98083

Tracking Number: B97C0270  
Project Name: Pacific Place  
Address: 28125 15<sup>th</sup> Avenue South (Temp)

Dear Mr. Reid:

The Technical Screening Team (TST) has screened your application for basic design compliance with respect to King County Codes and Ordinances. Your application has been forwarded for plan review; however, the following issues must be addressed as part of the plan review process:

#### Zoning, Landscaping and Parking

1. Several site issues remain unresolved, access, aisle widths and a potential road variance. Resolution of these issues may cause site plan changes that would require supplemental review. Rather than delaying all other reviews pending resolution of these matters, the plans will be routed to normal workstations without further comments. When site access and variance issues are settled, all plans will need to be updated to reflect those solutions. The issue of the 24' aisle width with 26 feet of back out from enclosed parking spaces has not been settled. That problem must be resolved before we can complete the review process. Redline comments will be used to make final adjustments during the site review process. Please contact Dave Baugh at (206) 296-7281 if you have any questions regarding this item.

#### Uniform Fire Code

2. Fire access around the exterior of buildings K and M still do not meet requirements as follows:

Michael Reid  
March 31, 1998  
Page 2

Building K - west side of southern half of building still shows grad at 2 to 1, not 3 to 1.

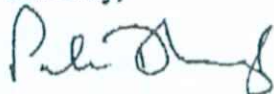
Building M - west side of building shows grade at 2 to 1, not 3 to 1.

Please contact Steve Phelps at (206) 296-6786 if you have any questions regarding this item.

If you would prefer to place the application on hold pending resolution of site issues I will honor that request. If this is your preference - please send or fax your request to me. If you have questions please feel free to contact me at (206) 296-6731. Specific code questions should be directed to the appropriate discipline between the hours of 8:30 AM to 4:30 PM.

Additional information submitted during the detailed review portion of the process should be submitted to the Permit Center along with the enclosed form. To facilitate processing the requested information should be submitted to the Permit Center in the BlackRiver Corporate Center, 900 Oakesdale Avenue Southwest, Renton, WA 98055-1219. Any information mailed to our office, will be sent to the permit center for processing.

Sincerely,



Pamela Dhanapal  
Supervisor, Technical Screening Team

Enclosure

PD:sk

cc: Marilyn Cox, Planning Supervisor, Land Use Service Division  
Chris Ricketts, Supervisor, Plans Examination  
Thomas W. McDonald, Fire Marshal  
Dave Baugh, Planner III  
Steve Phelps, Fire Protection Engineer II  
Ramon Loesin, Permit Technician  
Permit File B97C0270

*File copy sent 7/12/98*

DBM CONSULTING ENGINEERS

CIVIL ENGINEERING DESIGN • LAND PLANNING • SURVEYING  
ENVIRONMENTAL SERVICES

July 9, 1998

*MR*  
Mike Reid  
P.O. Box 2878  
Kirkland, WA 98083-2878

RE: Proposed 102 unit townhouse project, Pacific Place project located near Federal Way, Washington; Our Job Number: 9765.1

Dear Mike:

The purpose of this letter is to provide you with our site observation results as per our meeting a few weeks ago with you, Mr. Will Mansfield and myself.

During this meeting, Will indicated that he wanted to see an analysis from our regarding the potential carrying capacity of the existing downstream storm drainage pipe recently constructed by a homeowner adjacent to your southwest property corner. A letter was prepared (dated June 26, 1998) which indicated that we felt that the 8" concrete pipe (estimated size) could convey a 10-year bypass storm drainage discharge given certain assumptions.

This letter was prepared for Will Mansfield and for the express purpose of King County approving the SEPA determination for this project. As we discussed, the SEPA determination is based on qualitative review not quantitative review. During our meeting, I indicated to Will that I see three possible discharge scenarios for this project as follows:

1. 100% discharge at the southwest property corner. Will indicated that in order to allow this we would need to demonstrate that a concentrated flow exists at this property corner. We indicated to Will that we needed to complete a ground topographic survey to determine the existence of a broad swale which would create a concentrated flow for off-site storm drainage. Will agreed that an eroded channel bottom was not a criteria for determining whether a point of discharge existed. The topographic features will be more important in making this determination. We indicated to Will that we would prepare this topographic survey for him and submit the results in the future. We also indicated that this was still our preferred discharge location for the project based upon our site observations.
2. A split flow where we discharge 0.5 cfs at the southwest property corner through a flow spreader pipe and divert the remaining discharge to the existing pipe system constructed on the adjacent property.



March 29, 1999

If we add the 10-year discharge rate of the storm drainage retention-detention facility of 0.6 cfs to 2.06 cfs, we estimate that a total 10-year discharge rate at the culvert in question would be approximately 2.66 cfs. In order to discharge this amount of flow offsite, we would need a headwater condition of approximately 2.4. This would mean that the total depth of water would be approximately 20 inches. Based on our field inspections, it appears as though there may be an opportunity for water to build up to this level to create the necessary discharge condition. It appears that the available depth may be 2 to 3 feet of depth which would be available before an overflow occurs. The overflow condition would flood the adjacent property owner's backyard but probably not his home. However, we have not yet completed a detailed offsite topographic survey of the area, so we cannot tell for sure.

Therefore, it appears to us that the recently constructed offsite pipe can convey the 10-year discharge from the offsite bypass route, with a flow estimated at 2.06 cfs and the pre-developed 10-year release rate of 0.6 cfs so long as the hw/d ratio can build up to 2.4.

In any case, it appears to us as though a headwater condition of 1.0 would be possible. At this rate, we estimate the total inlet capacity of the pipe at 2.2 cfs. This is only slightly below the calculated maximum offsite flow for the project. Please note that we have routed the offsite storm drainage condition through the existing wetlands, and the wetlands act as a shock absorber for the offsite storm drainage situation. This wetlands, therefore, acts as its own detention facility for the offsite condition to attenuate flows accordingly. As a condition of SEPA approval, we feel comfortable recommending three possible discharge scenarios for this project; 100% discharge at the southwest property corner, 100% at the existing 8" offsite culvert as discussed above (assuming the detention facilities could tolerate the hw/d of 2.4 or a 20" depth surcharge at the outlet condition), or a split discharge between the two basins (while limiting the discharge at the southwest property corner to 0.5 cfs with a flow spreader).

Once we complete the offsite topographic survey, we will advise you further. If you have any questions, please do not hesitate to call.

Respectfully,

DANA B. MOWER, P.E.  
President

DBM:kc  
9765c.019  
Enclosures: TIR Calculations

# EASTSIDE CONSULTANTS, INC.

ENGINEERS-  
SURVEYORS

## LEVEL I DRAINAGE REPORT

TAVIS PROPERTY



## TAVIS LEVEL I DOWNSTREAM ANALYSIS

This site consists of 12.0 acres located in Section 33-22-04, lying west of Pacific Highway South between South 279th Street and South 282nd Place. The property is vegetated with mature evergreen and deciduous trees, brush and pasture grass.

The only structure on-site is a small shed. The property slopes generally to the west, with grades from 5 % to 40%  $\pm$ .

A review of the 1990 Sensitive Areas Map Folio showed two wetlands (Puget Sound # 50 and Puget Sound # 5) in the vicinity of the site. No other sensitive areas were shown on or near the site. None of the site is within a 100 Year Flood Plain according to the 1990 F.E.M.A. maps. This project is within the Puget Sound Sub-basin of the Puget Sound Drainage Basin. No Basin Plan has been adopted for the Puget Sound Drainage Basin yet.

The site is within the Federal Way Community Planning Area and may be subject to special requirements contained in the plan. No Critical Drainage Area requirements apply to this site.

The King County Basin Reconnaissance Summary Reports show that this site drains to collection point 18 of the Puget Sound Basin.

## UPSTREAM

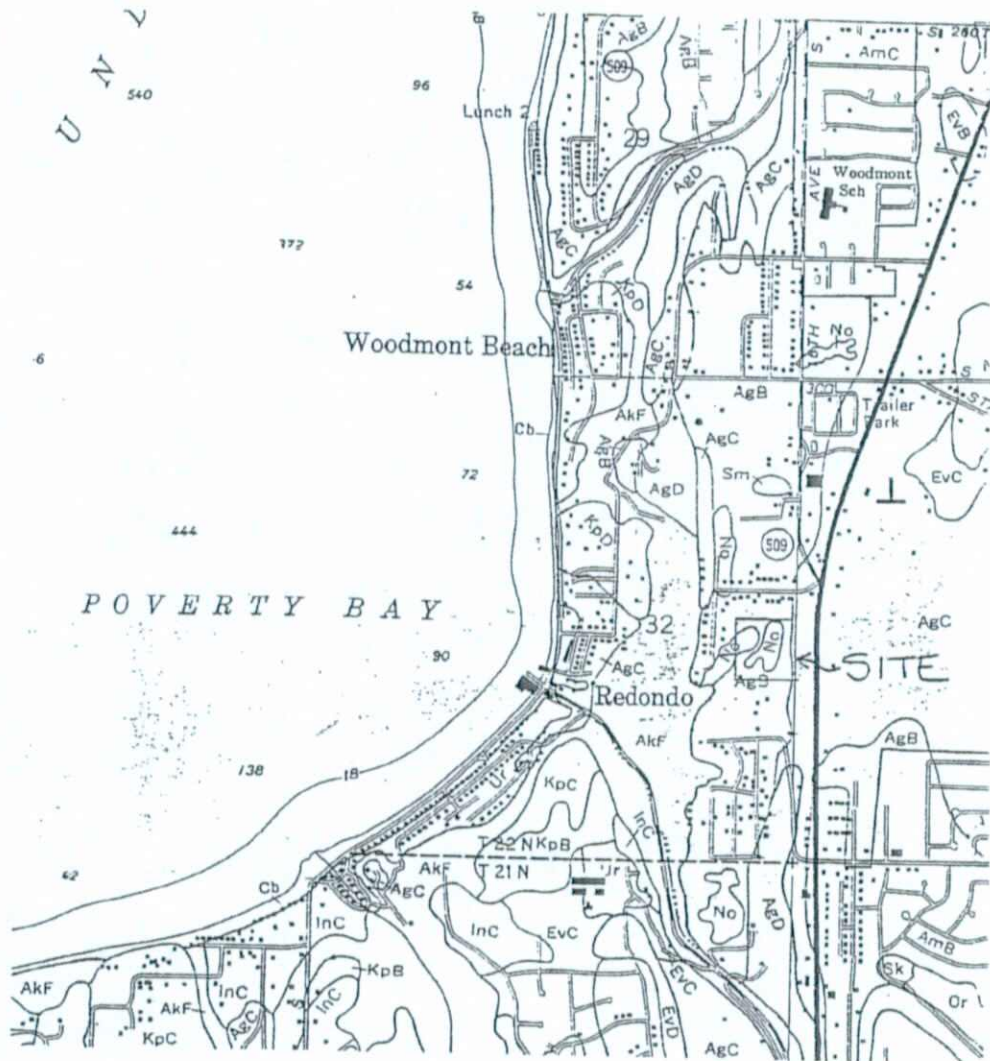
The upstream basin contributing to this site consists of 0.5 acres of paved roadway (Pacific Highway South) and shoulder immediately east of the site.

## DOWNSTREAM

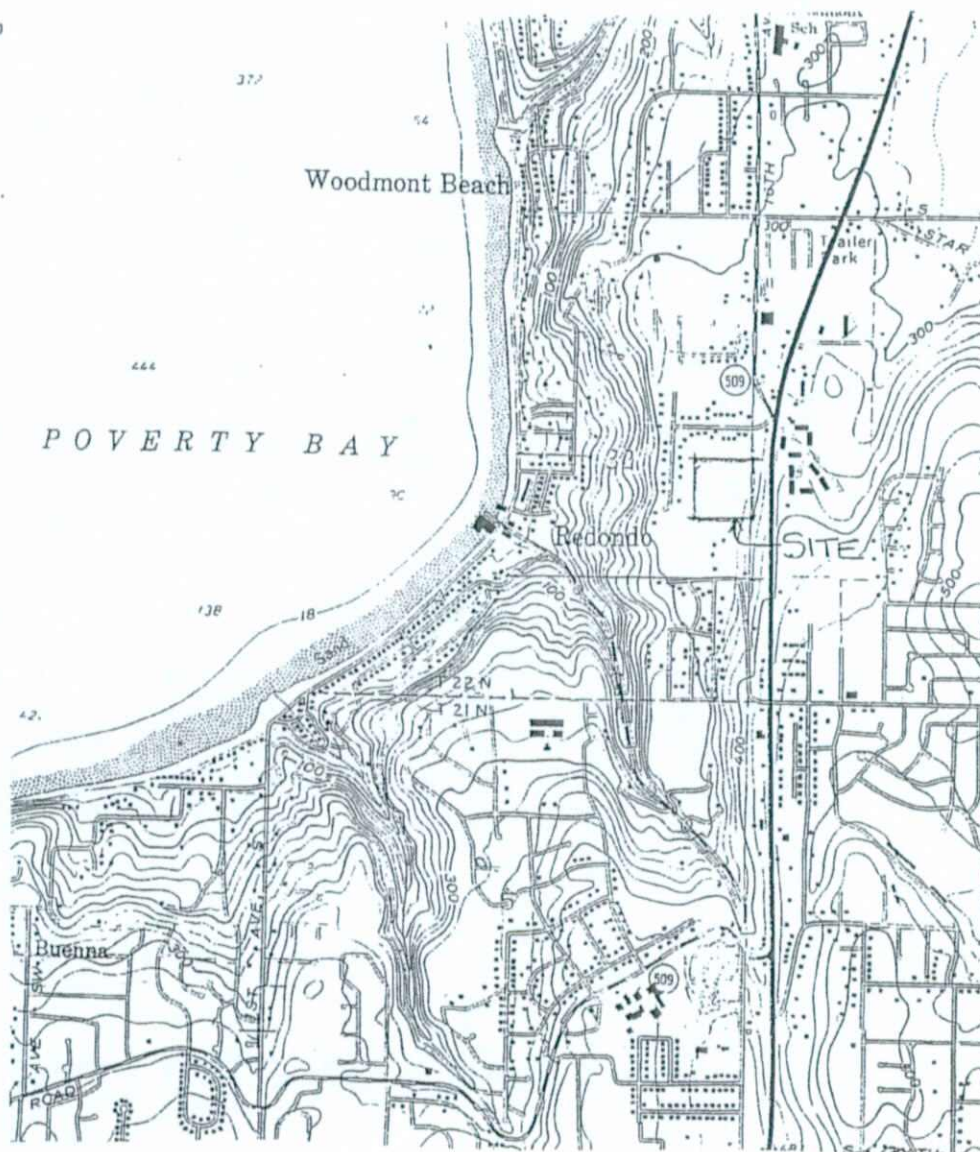
Runoff from the west half of the site sheet flows west and northwest to a wetland near the middle of the site. No outlet was found for the wetland area. The east 180 feet of the west half of the site drains east and southeast to the wetland near the middle of the site. Runoff from the remainder of the site sheet flows to a second wetland near the west property line. This wetland outlets to a drainage swale approximately 2' - 4' wide. This drainage is severely eroded, with little or no vegetation to stabilize the channel. The swale flows southwest to a point over 1/4 mile downstream of the project site.

A review of the S.W.M. Drainage Investigation Reports showed no complaints within a 1/4 mile downstream of the project site.





S.C.S. SOILS MAP  
1" = 2,000'



U.S.G.S. QUAD MAP  
1"  $\approx$  2000'



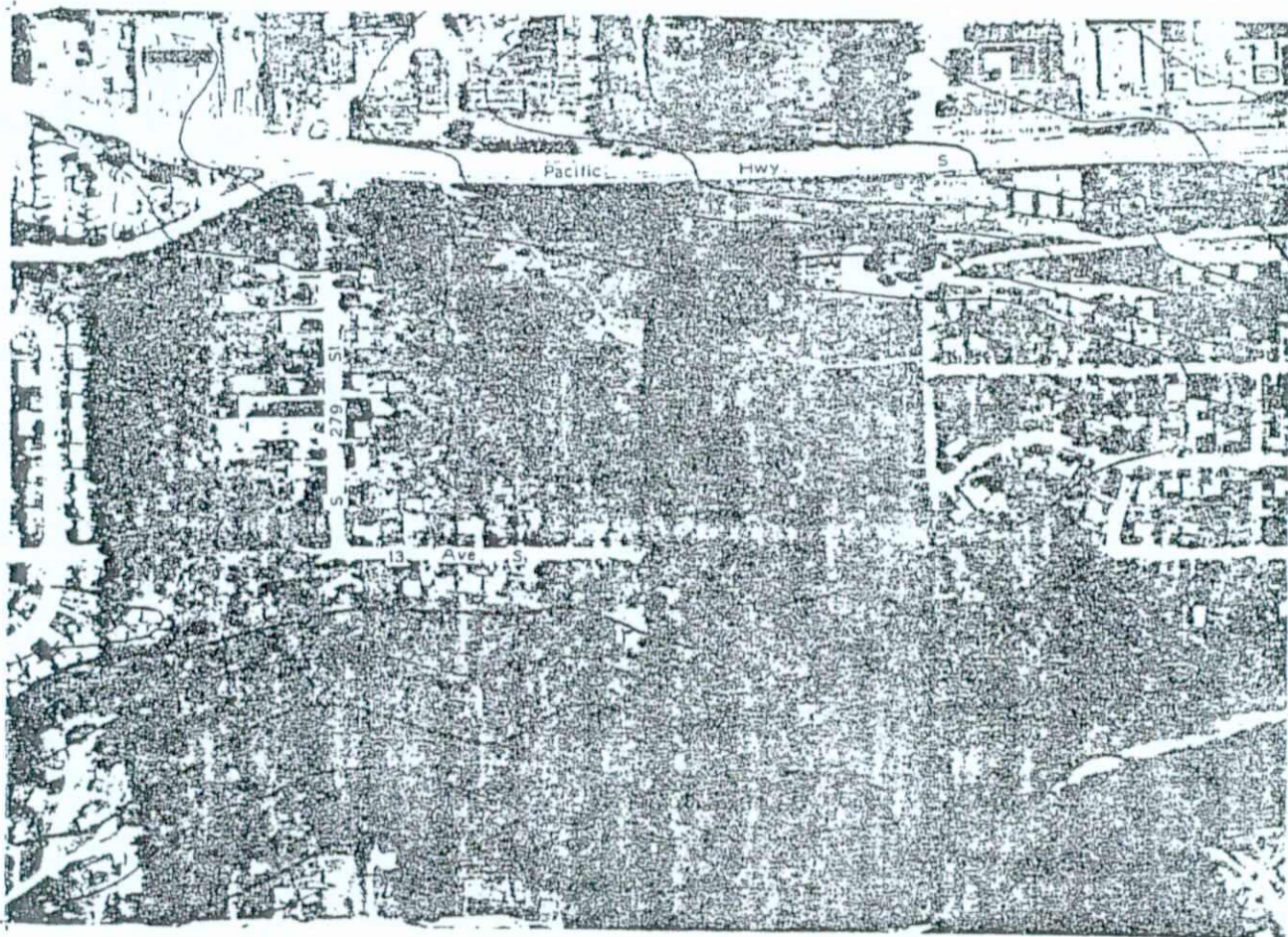


Photo Date: 05/01/80

Inventory Date: 06/10/81

N 

Scale: 1" = 500'

WETLAND: Lower Puget Sound 50

COMMUNITY  
PLAN AREA: Highline

LOCATION  
(S,T,R): SE-NE 32, 22N, 4E

BASIN OR  
DRAINAGE: Puget Sound

ACREAGE: 4.3

SENSITIVE AREA MAP#: 5

CLASSIFICATION:

Fish & Wildlife Service

Common Name

PFO1

Palustrine Forested Broad-leaved  
Deciduous (Black  
Cottonwood/Alder)

Forested

PFO4

Palustrine Forested Needle-leaved  
Evergreen (Hemlock)

Forested

NOTE:

Wetland boundaries shown are approximate. Further field studies are necessary to confirm the actual delineation of the wetland according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*.



OBSERVED SPECIES (refer to Appendix 1):

Trees: *AM AR PT TS TP*

Shrubs: *OC SR RT MD SX SD VP*

Herbs: *GM RR*

Sedges/Grasses/Ferns:

Birds: *MA CQ AR CO SS GF*

Mammals:

Fish:

Other:

HYDROLOGY:

Inlet: Type:  
Condition:

Outlet: Type: Open channel.  
Condition: Partially blocked.

Outflow enters: Stream.

Water movement through wetland: No visible movement (but water moving from outlet).

Observed water quality in wetland:

SIGNIFICANT HABITAT FEATURES: Some snags.

GENERAL OBSERVATIONS: Condos and houses around wetland; old car pieces; litter piles of dirt; noise from jets and traffic; pond is muddy from runoff. North of Applewood Plat extensively filled off-site (BALD file #78721).

WETLAND RATING (see Introduction for criteria): 2

NOTE: Species listed are only those observed during field visits. Further field studies are necessary to obtain a complete list including rare, threatened, and/or endangered species.

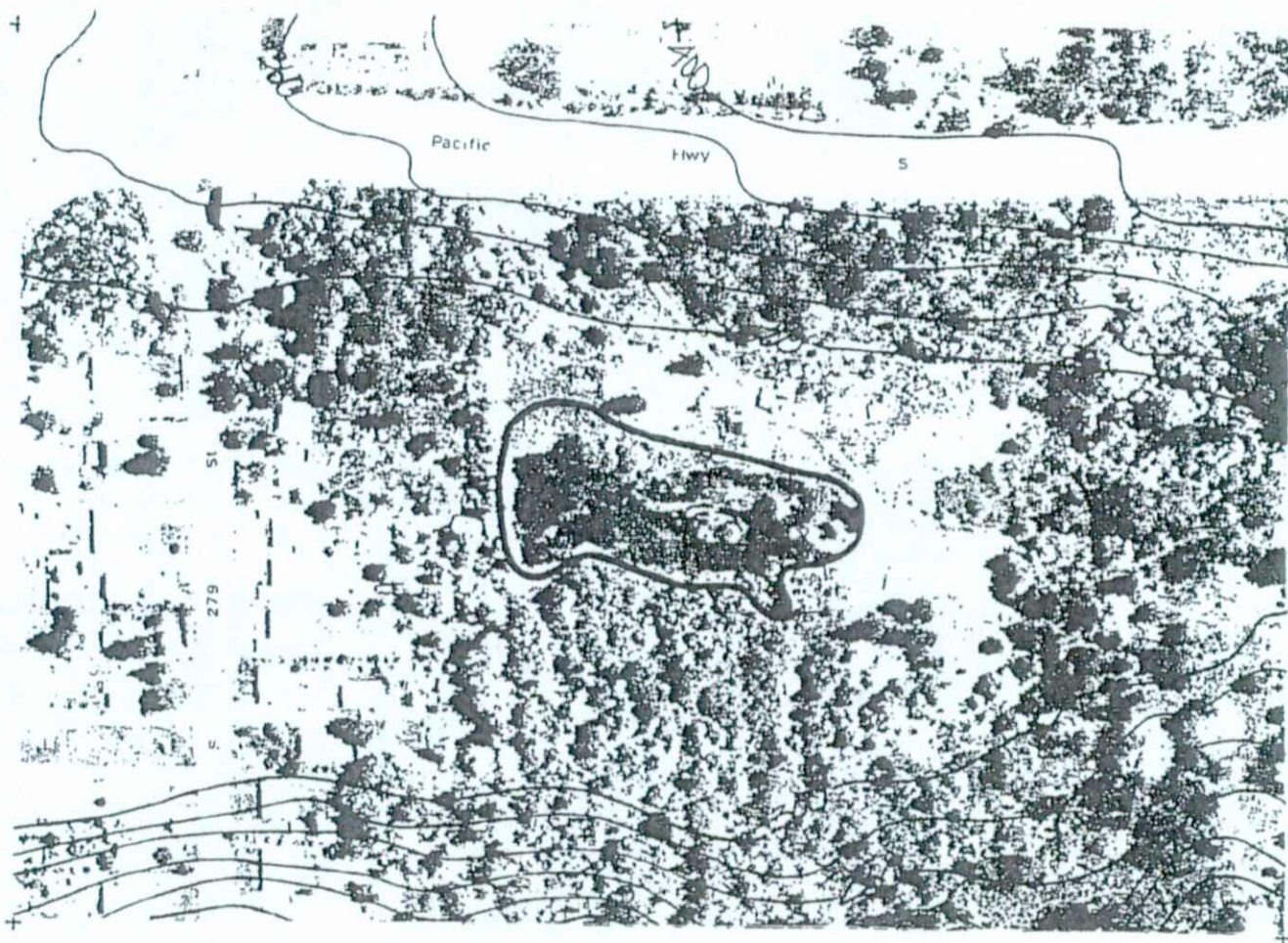


Photo Date: 05/01/80

Inventory Date: 06/10/81

N

Scale: 1" = 200'

WETLAND: Lower Puget Sound 5

COMMUNITY  
PLAN AREA: Federal Way

LOCATION  
(S,T,R): NE-SE 32, 22N, 4E

BASIN OR  
DRAINAGE: Puget Sound

ACREAGE: 1.3

SENSITIVE AREA MAP#: 5

| CLASSIFICATION: | Fish & Wildlife Service                                   | Common Name   |
|-----------------|-----------------------------------------------------------|---------------|
| PUB3            | Palustrine Unconsolidated Bottom Mud                      | Open Water    |
| PEM3            | Palustrine Emergent Narrow-leaved Nonpersistent (Cattail) | Shallow Marsh |
| PAB2            | Palustrine Aquatic Bed Submergent Vascular                | Shallow Marsh |
| PAB4            | Palustrine Aquatic Bed Floating-leaved                    | Shallow Marsh |

NOTE: Wetland boundaries shown are approximate. Further field studies are necessary to confirm the actual delineation of the wetland according to the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*.



OBSERVED SPECIES (refer to Appendix 1):

Lower Cretaceous Sound 5

Trees: *AR*

Shrubs: *SX SD*

Herbs: *PN IP OS RO RR TL VS*

Sedges/Grasses/Ferns: *JE LM*

Birds: *CH MA CQ VS RB*

Mammals:

Fish:

Other:

HYDROLOGY:

Inlet: Type:  
Condition:

Outlet: Type: None.  
Condition: Not observed.

Outflow enters: None.

Water movement through wetland:

Observed water quality in wetland:

SIGNIFICANT HABITAT FEATURES:

GENERAL OBSERVATIONS: Fill dirt from adjacent grading activity; noise from jets and highway traffic; garbage; rusty cars; some lod shacks. Owner dredged peat bog over 15 years ago -- created deep water area.

WETLAND RATING (see Introduction for criteria): *I (b)*

---

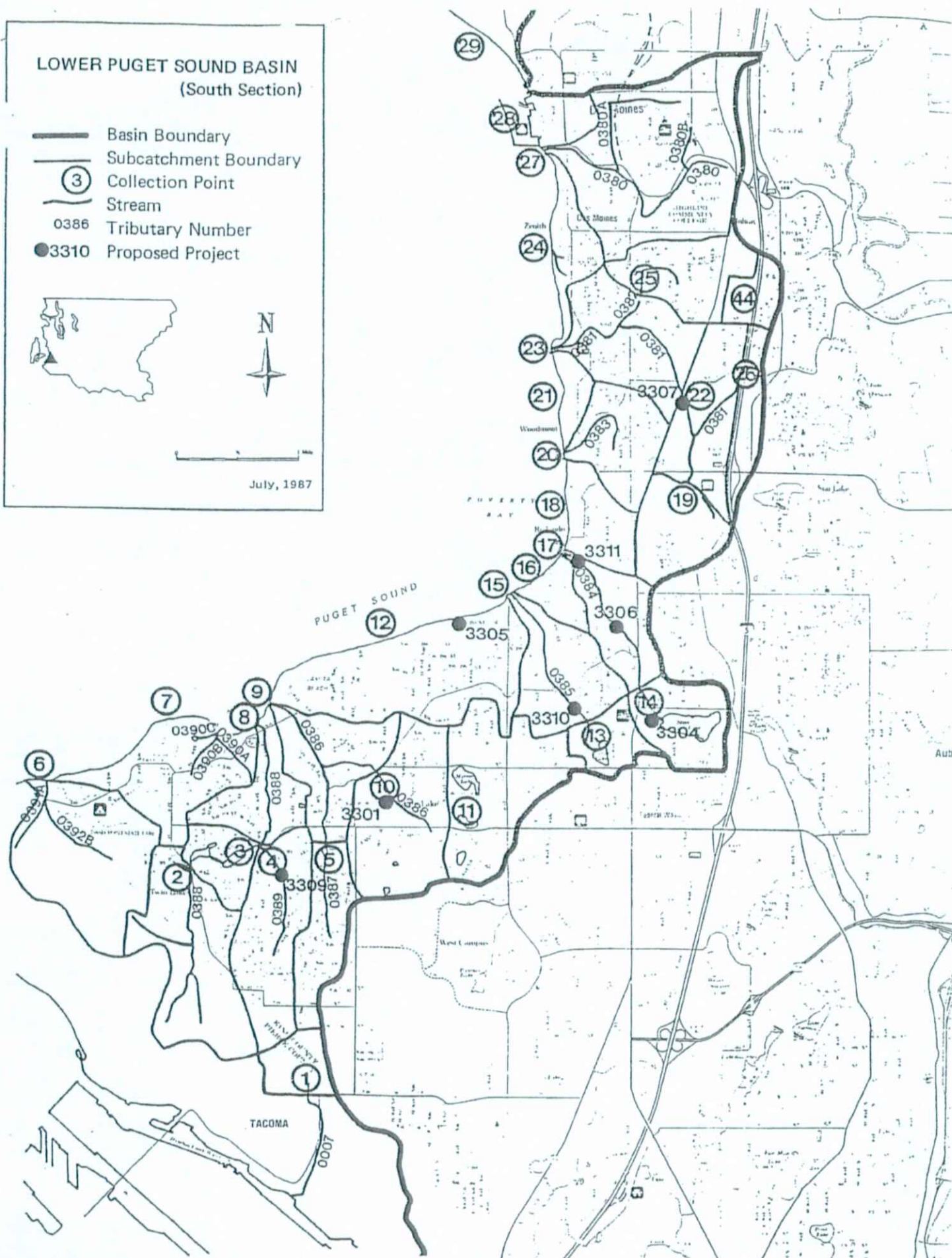
NOTE: Species listed are only those observed during field visits. Further field studies are necessary to obtain a complete list, including rare, threatened, and/or endangered species.



 Basin Boundary  
 Subcatchment Boundary  
 Collection Point  
 Stream  
 0386 Tributary Number  
 3310 Proposed Project



July, 1987



APPENDIX C  
DETAILED FINDINGS AND RECOMMENDATIONS  
LOWER PUGET SOUND BASIN

\* All items listed here are located on final display maps in the offices of Surface Water Management, Building and Land Development, and Basin Planning.

| Item* | Trib. & River Mile | Collect. Point | Category | Prop. Proj. | Existing Conditions and Problems                                                                                   | Anticipated Conditions and Problems                                                                                                          | Recommendations                                                                                                                                                                 |
|-------|--------------------|----------------|----------|-------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | 0007<br>RM 1.0     | 1              | Geology  |             | There is fill across swale on plateau. Home construction. Poor drainage.                                           | Runoff from uphill areas will probably cause wet soils and even minor flooding.                                                              | Control or reroute surface runoff.                                                                                                                                              |
| 2     | (coastal)          | 12             | Geology  |             | Large, old landslide is apparently still active. Erosion around headscarp.                                         | Slide problem will continue and/or accelerate on this recently logged bluff.                                                                 | <ul style="list-style-type: none"> <li>- Provide adequate setbacks for development.</li> <li>- Prevent outfall of surface runoff onto slide area or adjacent bluffs.</li> </ul> |
| 3     | (slopes)           | 12             | Geology  |             | Surface erosion and gully in pasture above Adelaide.                                                               | Livestock damage to slopes underlain by loose sandy-gravelly soils, perhaps exacerbated by surface runoff from residences uphill.            | Direct road drainage away from damaged slopes.                                                                                                                                  |
| 4     | (coastal)          | 18             | Geology  |             | Mapped landslide (old).                                                                                            | Already developed; no known complaints.                                                                                                      | Assure that future construction and runoff will not reactivate movement.                                                                                                        |
| 5     | (coastal)          | 34             | Geology  |             | Mapped landslides. Steep headwall slopes and coastal bluffs. Surface erosion on steep slopes when soil is exposed. | Slump topography, steep slopes, and seepage suggest possibility of continuing failure. (Parts are currently being prepared for development.) | Exercise extreme caution in routing surface runoff from plateau and from roads and buildings on slopes.                                                                         |



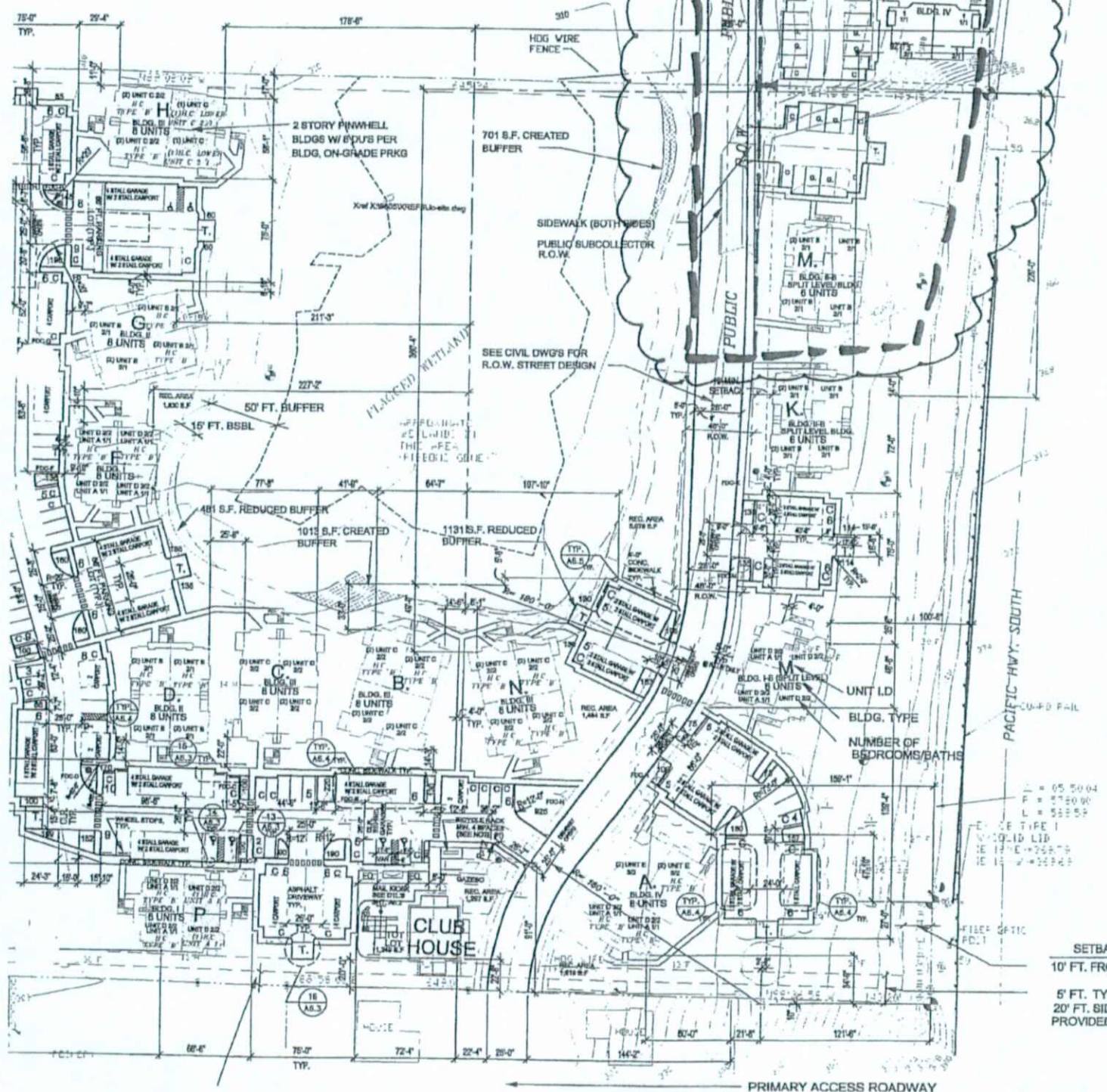
| <u>Item</u> | <u>Trib. &amp;<br/>River Mile</u> | <u>Collect.<br/>Point</u> | <u>Category</u> | <u>Prop. Proj.</u> | <u>Existing<br/>Conditions and Problems</u>                           | <u>Anticipated<br/>Conditions and Problems</u>                                                                                                                            | <u>Recommendations</u>                                                                                                                                                                                         |
|-------------|-----------------------------------|---------------------------|-----------------|--------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6           | (coastal)                         | 36                        | Geology         |                    | Landslide on coastal bluff has moved (probably since Jan. '86 storm). | Landslide affects Indian Trail (County land) and surrounding area. Toe is unprotected from wave action. Will probably continue to move.                                   | Assure surface runoff is piped to beach or routed to more stable area in developments. May require structural reinforcement, drainage.                                                                         |
| 7           | (coastal)                         | 38                        | Geology         |                    | Recent (Jan. '86) landslides on slopes above Seahurst Park.           | More or less seasonal loss of bluff edge will continue.                                                                                                                   | <ul style="list-style-type: none"> <li>- Route surface runoff away from steeper bluffs.</li> <li>- Assess need for structural and vegetative reinforcement on slopes.</li> <li>- Revegetate slopes.</li> </ul> |
| 8           | <u>0361A</u><br>RM .60-.70        | 42                        | Geology         |                    | Landslides in stream valley.                                          | Valley side may have been oversteepened by cut for Seola Beach Dr.; roof and/or street drainage from above. There is a possibility of similar problems throughout valley. | Redirect drainage west to ravine where slope is not so steep, or tightline it to the bottom.                                                                                                                   |
| 9           | <u>0361A</u><br>RM .84-.70        | 42                        | Geology         |                    | Channel downcutting and bank erosion.                                 | Increased runoff from above is causing channels to erode (sandy & gravelly soils very susceptible). Undercutting of hillsides.                                            | Reduce runoff rate from upper drainage basin (subcatchment 43) and from flow now routed into tributary valleys to less erosive levels.                                                                         |



## 56 — J"

$$i = 100$$

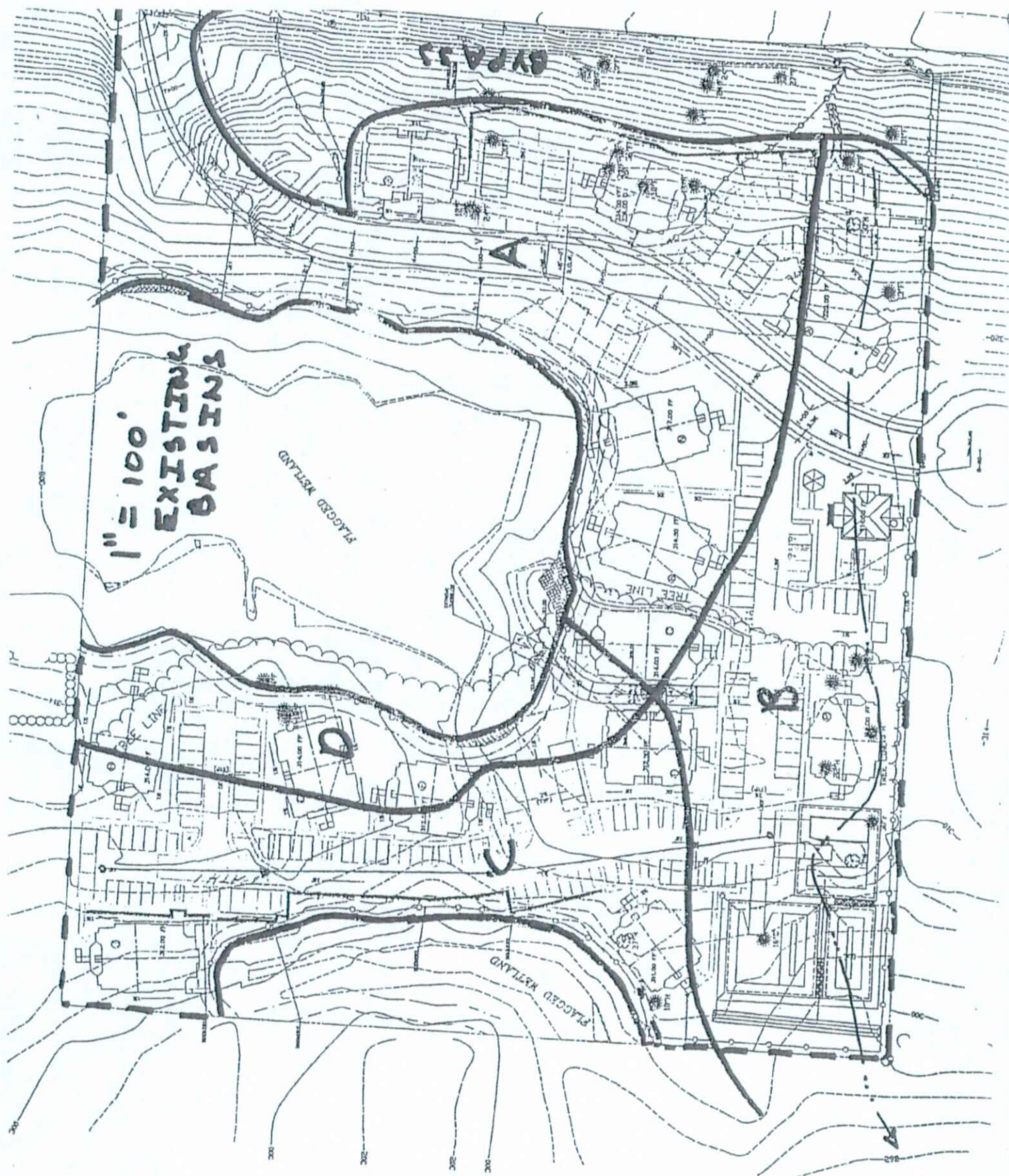

### CHOI ADDITION



SETBACK  
10' FT. FROM  
5' FT. TYPE  
20' FT. SIDE  
PROVIDED



5945









BDH

9765-1 CHOI ADD

M.13.04.98

SUMMARY OF PROPOSED BASIN (E) - FROM  
PACIFIC PLACE T.I.R.

PACIFIC PLACE PORTION SUMMARY.

IMPERVIOUS AREA, 3.5 AC CN = 98

PERVIOUS AREA, 2.3 AC CN = 74

\* CHOI ADDITION

• PACIFIC HAD 760 ft OF COUNTY ROAD.

• CHOI ADDITION CHANGES THIS TO: 980 ft.

$$\therefore 980 - 760 = 220' \text{ NEW ROAD @ } 40' \text{ WIDE}$$

$$\therefore 220(40) = 8,800 \text{ sf} = 0.2 \text{ AC ADDITIONAL ASPHALT/SIDEWALK}$$

$$\text{ALSO ADDS: } 6.0 \text{ (map units)} = 6.0 \times 100^2 \text{ sf} \\ 60,000 \text{ sf} = 1.4 \text{ AC.}$$

OF WHICH:

$$\begin{aligned} \text{BLOKS: } N &\nearrow 65 \times 150 = 9,750 \text{ sf} \approx 9900 \text{ sf} \\ M &\nearrow 4,100 \text{ sf} \\ \Sigma &= 13,900 \text{ sf} \approx 0.3 \text{ AC} \end{aligned}$$

$$\begin{aligned} \text{PARKING: } P_1 &\nearrow 60 \times 70 = 4,200 \text{ sf} \\ P_2 &\nearrow 70 \times 155 = 10,850 \text{ sf} \\ \Sigma &= 15,050 \text{ sf} \approx 0.4 \text{ AC} \end{aligned}$$

$$\Sigma \text{ IMP} = 0.7 \text{ AC}$$

$$\begin{aligned} \therefore A_i &= 3.5 + 0.3 + 0.2 + 0.4 = 4.40 \text{ AC} \\ A_p &= 2.3 + (1.4 - 0.3 - 0.4) = 3.0 \text{ AC} \end{aligned}$$



• NEW  $T_c$  CALCULATIONS

TOP OF PROP 15<sup>TH</sup> AVE S EL = 2316  
 BOTTOM OF PROP 15<sup>TH</sup> AVE EL = 311

$A \approx 5'$   $L \approx 980'$  NEW ROAD.

$$\therefore S = \frac{5'}{980} \approx 0.5\%$$

IF MODEL AS (INTERMITTANT PIPE FLOW)

$$V_T \approx 42 \sqrt{0.005} \approx 3.0 \text{ ft/s}$$

$$\therefore T_T = 980 / 3 = 327 \text{ s} = \underline{5.4 \text{ min}}$$

FROM 15<sup>TH</sup> ST. LOW END TO FORKS IN PIPE  
 @ 1%

$$V_T = (0.807 / 0.012) \sqrt{0.01} = 6.7 \text{ ft/s}$$

$$L \approx 270' \therefore T_T = 270 / 6.7 = 40.3 \text{ s} = 0.7 \text{ min}$$

$$T_c = 5.4 + 0.7 \approx 6.1 \text{ min}$$

STORM VALUESALLOWED RELEASES

$$P_{100} = 4.10''$$

$$Q_{100} = 0.83 \text{ cfs}$$

$$P_{10} = 2.95''$$

$$Q_{10} = 0.36 \text{ cfs}$$

$$P_2 = 2.05''$$

$$Q_2 = (0.08)^{1/2} = 0.04 \text{ cfs}$$

$$\text{WATER QUALITY STORM, } P_{WQ} = \frac{1}{3} P_2 = \frac{2.05}{3} = \underline{0.68''}$$



## S.C.S. TYPE-1A RAINFALL DISTRIBUTION

ENTER: FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

100,24,4.1

\*\*\*\*\* S.C.S. TYPE-1A DISTRIBUTION \*\*\*\*\*  
 \*\*\*\*\* 100-YEAR 24-HOUR STORM \*\*\*\* 4.10" TOTAL PRECIP. \*\*\*\*\*

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 1  
 2.3,74,3.7,98,6.1

DATA PRINT-OUT:

| AREA(ACRES) | PERVIOUS |      | IMPERVIOUS |      | TC(MINUTES)         |
|-------------|----------|------|------------|------|---------------------|
|             | A        | CN   | A          | CN   |                     |
| 6.0         | 2.3      | 74.0 | 3.7        | 98.0 | 6.1 ← CONSERVATIVE. |

| PEAK-Q(CFS) | T-PEAK(HRS) | VOL(CU-FT) |
|-------------|-------------|------------|
| 4.63        | 7.67        | 65850      |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 2  
 3.0,74,4.4,98,6.1

DATA PRINT-OUT:

| AREA(ACRES) | PERVIOUS |      | IMPERVIOUS |      | TC(MINUTES) |
|-------------|----------|------|------------|------|-------------|
|             | A        | CN   | A          | CN   |             |
| 7.4         | 3.0      | 74.0 | 4.4        | 98.0 | 6.1         |

| PEAK-Q(CFS) | T-PEAK(HRS) | VOL(CU-FT) |
|-------------|-------------|------------|
| 5.60        | 7.67        | 79914      |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:  
 c:\h\pc-100.hyd



-----  
 \*\*\*\*\* S.C.S. TYPE-1A DISTRIBUTION \*\*\*\*\*  
 \*\*\*\*\* 10-YEAR 24-HOUR STORM \*\*\*\*\* 2.95" TOTAL PRECIP. \*\*\*\*\*  
 -----

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 1  
 2.3, 74, 3.7, 98, 6.1

DATA PRINT-OUT: (B)

| AREA (ACRES) | PERVIOUS |      | IMPERVIOUS |      | TC (MINUTES) |
|--------------|----------|------|------------|------|--------------|
|              | A        | CN   | A          | CN   |              |
| 6.0          | 2.3      | 74.0 | 3.7        | 98.0 | 6.1          |

| PEAK-Q (CFS) | T-PEAK (HRS) | VOL (CU-FT) |
|--------------|--------------|-------------|
| 3.04         | 7.67         | 43829       |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:  
 c:\h\pb-010.hyd

-----  
 ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 2  
 3, 74, 4.4, 98, 6.1

DATA PRINT-OUT: (C)

| AREA (ACRES) | PERVIOUS |      | IMPERVIOUS |      | TC (MINUTES) |
|--------------|----------|------|------------|------|--------------|
|              | A        | CN   | A          | CN   |              |
| 7.4          | 3.0      | 74.0 | 4.4        | 98.0 | 6.1          |

| PEAK-Q (CFS) | T-PEAK (HRS) | VOL (CU-FT) |
|--------------|--------------|-------------|
| 3.65         | 7.67         | 52964       |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:  
 c:\h\pc-010.hyd

-----  
 \*\*\*\*\* S.C.S. TYPE-1A DISTRIBUTION \*\*\*\*\*  
 \*\*\*\*\* 2-YEAR 24-HOUR STORM \*\*\*\* 2.05" TOTAL PRECIP. \*\*\*\*\*  
 -----

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 1  
 2.3, 74, 3.7, 98, 6.1

DATA PRINT-OUT: (B)

| AREA (ACRES) | PERVIOUS<br>A CN | IMPERVIOUS<br>A CN | TC (MINUTES) |
|--------------|------------------|--------------------|--------------|
| 6.0          | 2.3 74.0         | 3.7 98.0           | 6.1          |

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| PEAK-Q (CFS)<br>1.88 | T-PEAK (HRS)<br>7.67 | VOL (CU-FT)<br>27614 |
|----------------------|----------------------|----------------------|

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:  
 c:\h\pb-002.hyd

-----  
 ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 2  
 3, 74, 4.4, 98, 6.1

DATA PRINT-OUT: (C)

| AREA (ACRES) | PERVIOUS<br>A CN | IMPERVIOUS<br>A CN | TC (MINUTES) |
|--------------|------------------|--------------------|--------------|
| 7.4          | 3.0 74.0         | 4.4 98.0           | 6.1          |

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| PEAK-Q (CFS)<br>2.24 | T-PEAK (HRS)<br>7.67 | VOL (CU-FT)<br>33197 |
|----------------------|----------------------|----------------------|

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:  
 c:\h\pc-002.hyd

## SUMMARY OF INPUT ITEMS

OPTION B - CHOI ROAD ADDITION ONLY

- 1) TYPE OF FACILITY: POND ( .0:1 SIDE SLOPES)
- 2) STORAGE DEPTH(ft): 3.50
- 3) VERTICAL PERMEABILITY(min/in): .00
- 4) PRIMARY DESIGN HYDROGRAPH FILENAME: c:\h\pb-100.hyd
- 5) PRIMARY RELEASE RATE(cfs): .83
- 6) NUMBER OF TEST HYDROGRAPHS: 2
  - TEST HYD 1 FILENAME: c:\h\pb-010.hyd TARGET RELEASE(cfs): .36
  - TEST HYD 2 FILENAME: c:\h\pb-002.hyd TARGET RELEASE(cfs): .04
- 7) NUMBER-OF-ORIFICES, RISER-HEAD(ft), RISER-DIAM(in): 2, 3.50, 18
- 8) ITERATION DISPLAY: NO

ENTER ITEM NUMBER TO BE REVISED (ENTER ZERO IF NO REVISIONS ARE REQUIRED):

BOTTOM ORIFICE: ENTER Q-MAX(cfs)

0.05

DIA.= .99 INCHES

TOP ORIFICE: ENTER HEIGHT(ft)

3.2

DIA.= 7.25 INCHES

| PERFORMANCE: | INFLOW | TARGET-OUTFLOW | ACTUAL-OUTFLOW | PK-STAGE | STORAGE |
|--------------|--------|----------------|----------------|----------|---------|
| DESIGN HYD:  | 4.63   | .83            | .83            | 3.50     | 35184   |
| TEST HYD 1:  | 3.04   | .36            | .36            | 3.32     | 33350   |
| TEST HYD 2:  | 1.88   | .04            | .04            | 2.51     | 25240   |

SPECIFY: D - DOCUMENT, R - REVISE, A - ADJUST ORIF, E - ENLARGE, S - STOP

ENLARGEMENT OPTION: ALLOWS FOR INCREASING STORAGE AT A SPECIFIED



STAGE HEIGHT, TO PROVIDE A FACTOR OF SAFETY.

ENTER: STORAGE-INCREASE(%), STAGE-HEIGHT(ft)  
30,3.5

| PERFORMANCE: | INFLOW | TARGET-OUTFLOW | ACTUAL-OUTFLOW | PK-STAGE | STORAGE |
|--------------|--------|----------------|----------------|----------|---------|
| DESIGN HYD:  | 4.63   | .83            | .61            | 3.42     | 44616   |
| TEST HYD 1:  | 3.04   | .36            | .05            | 3.15     | 41170   |
| TEST HYD 2:  | 1.88   | .04            | .04            | 1.96     | 25540   |

← REQ W/SF  
FOR OPTION B

SPECIFY: D - DOCUMENT, R - REVISE, A - ADJUST ORIF, E - ENLARGE, S - STOP

\*\*\*\*\*

SUMMARY OF INPUT ITEMS

FOR OPTION C - CHOI ROAD & BLDG ADDITION

- 1) TYPE OF FACILITY: POND ( .0:1 SIDE SLOPES)
- 2) STORAGE DEPTH(ft): 3.50
- 3) VERTICAL PERMEABILITY(min/in): .00
- 4) PRIMARY DESIGN HYDROGRAPH FILENAME: c:\h\pc-100.hyd
- 5) PRIMARY RELEASE RATE(cfs): .83
- 6) NUMBER OF TEST HYDROGRAPHS: 2
 

|                      |                 |                      |     |
|----------------------|-----------------|----------------------|-----|
| TEST HYD 1 FILENAME: | c:\h\pc-010.hyd | TARGET RELEASE(cfs): | .36 |
| TEST HYD 2 FILENAME: | c:\h\pc-002.hyd | TARGET RELEASE(cfs): | .04 |
- 7) NUMBER-OF-ORIFICES, RISER-HEAD(ft), RISER-DIAM(in): 2, 3.50, 18
- 8) ITERATION DISPLAY: NO

ENTER ITEM NUMBER TO BE REVISED (ENTER ZERO IF NO REVISIONS ARE REQUIRED):

BOTTOM ORIFICE: ENTER Q-MAX(cfs)

0.05

DIA.= .99 INCHES

TOP ORIFICE: ENTER HEIGHT(ft)

3.34

DIA.= 8.48 INCHES

| PERFORMANCE: | INFLOW | TARGET-OUTFLOW | ACTUAL-OUTFLOW | PK-STAGE | STORAGE |
|--------------|--------|----------------|----------------|----------|---------|
| DESIGN HYD:  | 5.60   | .83            | .84            | 3.50     | 50553   |
| TEST HYD 1:  | 3.65   | .36            | .36            | 3.40     | 49100   |
| TEST HYD 2:  | 2.24   | .04            | .04            | 2.15     | 31070   |

REQ w/o SF.

SPECIFY: D - DOCUMENT, R - REVISE, A - ADJUST ORIF, E - ENLARGE, S - STOP

ENLARGEMENT OPTION: ALLOWS FOR INCREASING STORAGE AT A SPECIFIED  
STAGE HEIGHT, TO PROVIDE A FACTOR OF SAFETY.

ENTER: STORAGE-INCREASE(%), STAGE-HEIGHT(ft)

30, 3.5

| PERFORMANCE: | INFLOW | TARGET-OUTFLOW | ACTUAL-OUTFLOW | PK-STAGE | STORAGE |
|--------------|--------|----------------|----------------|----------|---------|
| DESIGN HYD:  | 5.60   | .83            | .65            | 3.46     | 64970   |
| TEST HYD 1:  | 3.65   | .36            | .04            | 2.69     | 50510   |
| TEST HYD 2:  | 2.24   | .04            | .03            | 1.67     | 31340   |

REQ w/SF.  
FOR OPTC

SPECIFY: D - DOCUMENT, R - REVISE, A - ADJUST ORIF, E - ENLARGE, S - STOP

## S.C.S. TYPE-1A RAINFALL DISTRIBUTION

ENTER: FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

1,24,0.7

-----

\*\*\*\*\* S.C.S. TYPE-1A DISTRIBUTION \*\*\*\*\*

\*\*\*\*\* 1-YEAR 24-HOUR STORM \*\*\*\*\* .70" TOTAL PRECIP. \*\*\*\*\*

-----

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 1

2.3,74,3.7,98,6.1

DATA PRINT-OUT:

| AREA(ACRES) | PERVIOUS | IMPERVIOUS | TC(MINUTES) |
|-------------|----------|------------|-------------|
|             | A CN     | A CN       |             |
| 6.0         | 2.3 74.0 | 3.7 98.0   | 6.1         |

| PEAK-Q(CFS) | T-PEAK(HRS) | VOL(CU-FT) |
|-------------|-------------|------------|
| .51         | 7.67        | 6760       |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

*b-wq.hyd*

-----

ENTER: A(PERV), CN(PERV), A(IMPERV), CN(IMPERV), TC FOR BASIN NO. 2

3,74,4.4,98,6.1

DATA PRINT-OUT:

| AREA(ACRES) | PERVIOUS | IMPERVIOUS | TC(MINUTES) |
|-------------|----------|------------|-------------|
|             | A CN     | A CN       |             |
| 7.4         | 3.0 74.0 | 4.4 98.0   | 6.1         |

| PEAK-Q(CFS) | T-PEAK(HRS) | VOL(CU-FT) |
|-------------|-------------|------------|
| .60         | 7.67        | 8039       |

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

*c-wq.hyd*

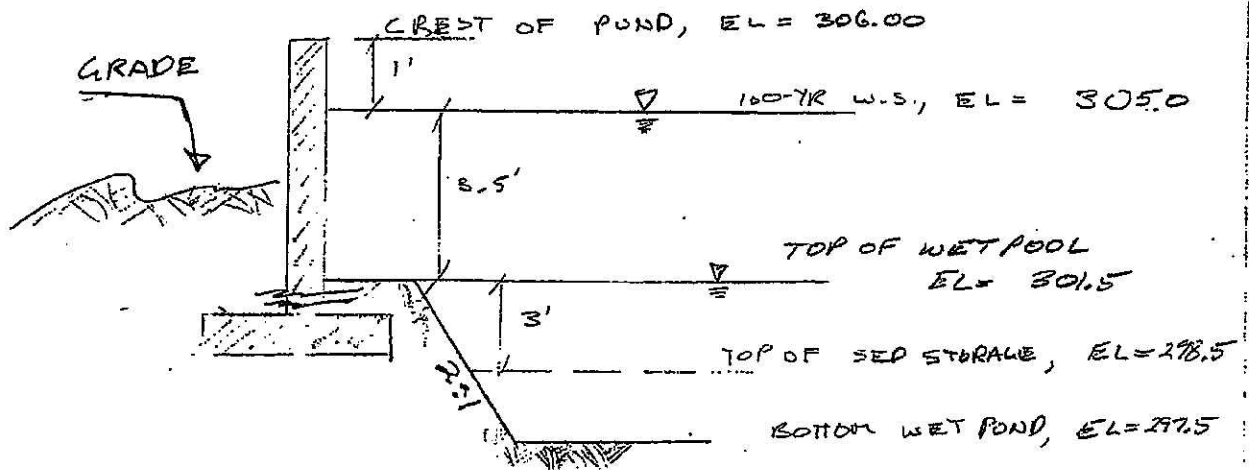


BDH

9765.1 C.HOT ADD.

T.14.04.98

## o CONCEPTUAL VERTICAL WALL POND DESIGN.



B D H

9765.1 POND V.

T. 14.04.98

## GROSS POND VOLUME CALCULATIONS

EXTENSION ALONG STRIP BETWEEN ROAD & R.  
 WIDTH ~ 68'  $\Rightarrow$  65'

$$V = 65 (3.5) (L) = 227.5 (L)$$

$$20,000 = 227.5 (L) \Rightarrow L = \underline{\underline{88'}}$$

PARKING LOT IS  $\approx$  75' WIDE WITH S.W.

EACH PARKING STALL W/SW IS  $\frac{1}{2}(75-26) = 24.5$ .

LOSING:

HALF LOT GIVES:  $227 (24.5) = 5,600$  CF

FULL LOT GIVES:  $227 (75) = 17,000$  CF

GROSS POND VOLUME, BEFORE RAMPS & BERMS  
 ARE SUBTRACTED

OPT:

C:

$$3.5 \left[ (90 \times 125) + (155 \times 65) + \frac{1}{2} (60 \times 20) \right] =$$

$$3.5 (11,250 + 10,075 + 600) = 3.5 (21,925) = 76,700 \text{ cf.}$$

RAW, BERMS & ACCESS ROADS WILL REDUCE THIS.

CPT

B:

$$3.5 \left[ 11,250 + (80 \times 65) + 600 \right] = 3.5 (17,050) =$$

$$59,675 \text{ cf.}$$



BDH

9765.1 CHOI ADD

11.13.04.86

MODEL INPUT FOR ALT BWITH ONLY CHOI ROAD

$$A_p = 2.3 A_c \quad CN = 74$$

$$A_c = 3.5 + 0.2 = 3.7 A_c \quad CN = 98$$

$$T_c = 6.1 \text{ min}$$

3.5' DEEP, VERTICAL WALL POND.

$$V_{REQ} = 35,000 \text{ cf}$$

$$V_{SF} = 45,000 \text{ cf} \quad \text{w/ SAFETY FACTOR (+30\%)}$$

WILL HAVE TO DESIGN WIER TO REPLACE SECOND ORIFICE.

$$V = 76,700 \text{ cf} - (\text{BERMS} + \text{ACCESS ROADS})$$

$$\text{BERMS: } 95 + 85' \text{ LONG} = 180' \text{ LONG.}$$

$$X\text{-SEC} \quad \begin{array}{c} 15' \\ \text{---} \\ 15' \end{array} \quad 25' \quad A = (5+15) 2.5 (1/2) = 25.$$

$$V_{BERMS} = 180 (25) = 4,500 \text{ cf}$$

ACCESS ROADS:

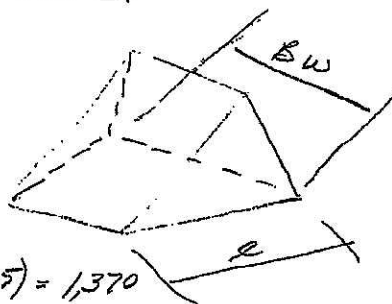
BACK WIDTH

$$BW = 15' + 3.5(1)(2) = 29'$$

$$L = 6(3.5) = 21'$$

$$1/2 BW \cdot L \cdot H = 1/2 (29)(21)(3.5) = 1,370$$

(HIGH ESTIMATE)

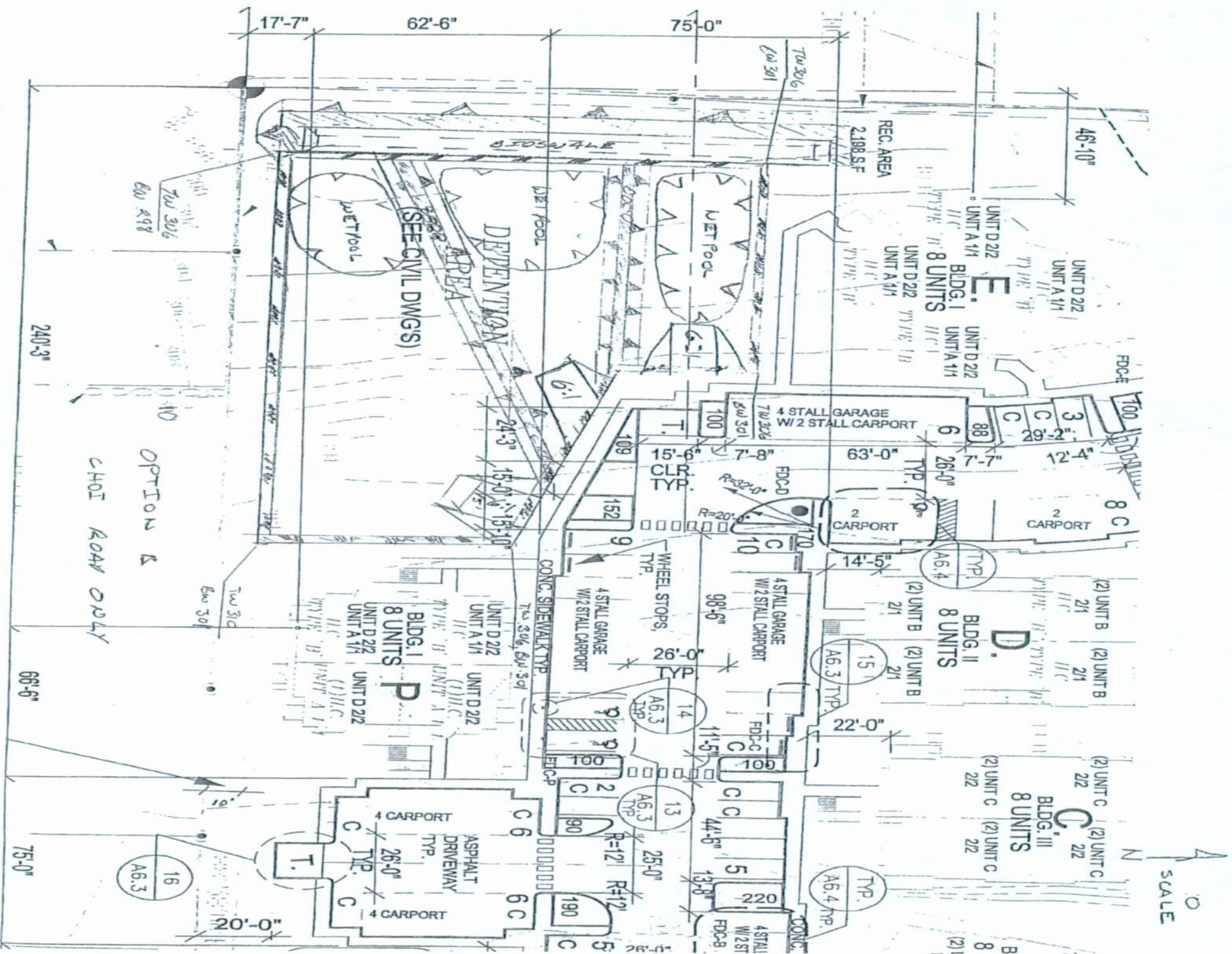


$$V_T = 76,700 - 4,500 - 1,370 (3) \approx \underline{68,100 \text{ cf}}$$

$$\text{WATER QUALITY: } V = 6,800 \text{ cf} \quad Q = 0.51 \text{ cfs}$$







COST QUANTITIES FOR OPTION B:

## • RETAINING WALL AREA:

$$5(35+85) = 5(120) = 600 \text{ sf}$$

$$(8+9)\frac{1}{2}(175) = 1,487.5 \text{ sf}$$

$$(5+8)\frac{1}{2}(130) = 845 \text{ sf}$$

$$5(95) = 475 \text{ sf}$$

$$\Sigma = 3,407.5 \text{ sf} \approx \underline{\underline{3,400 \text{ sf}}}$$

## • EXCAVATION VOLUMES:

FOR LIVE STORAGE, EXCAVATION IS APPROX  
0' AT WEST SIDE, AND APPROX 10' AT  
FAR EAST SIDE.

ASSUME,

AVE 5' DEEP OVER 17,050 sf

$$V_1 = 85,250 \text{ cf} \approx 3,200 \text{ CY}$$

$$V_{WQ} \approx 7,000 \text{ cf} \approx 260 \text{ CY}$$

$$\Sigma = 3,500 \text{ CY}$$

## • 3 ACCESS ROAD RAMPS, FILL VOLUME

" APPROX 1,370 cf  $\approx$  50 CY &  $\approx$  30' LONG, 15' WIDE  
3 ARE 150 CF & 50 SF  $\Rightarrow$  17 SF EACH

• 2 BERMS,  $V \approx 4,500 \text{ cf} \approx$  170 CY• WET POOL LINERS, SA  $\approx 7,000/3 \approx$  2,300 sf• HYDROSEEDING, 17,050 sf  $\approx$  1,900 SF• FENCING  $L = 120 + 175 + 130 + 95 = 520 \text{ LF}$ • CONTROL MH., 1 DRAIN MH., 1

## • 1 SPILLWAY

• 1 BIO SWALE: SA  $\approx 11'(130) \approx 1,430 \text{ sf} \approx$  1,400 SF

$$\text{BERM EMBANKMENT, } V \approx 8.5(140) = 1,200 \text{ CF} \approx \underline{\underline{40 \text{ CY}}}$$



## PRELIMINARY DEVELOPMENT COST ESTIMATE

REVISED 2/2/98

PROJECT NAME: PACIFIC/CHOI PLACE OPTION B

PROJECT NUMBER: 9765.1

LOCATION: \_\_\_\_\_

NUMBER OF LOTS: \_\_\_\_\_

CLIENT: \_\_\_\_\_

ACREAGE: \_\_\_\_\_

DATE OF ESTIMATE: \_\_\_\_\_

### GENERAL NOTES:

1. This estimate was prepared without the benefit of approved constructions plans, and the Engineer makes no guarantee or warranty, expressed or implied, as to the accuracy of the quantities outlined.
2. The Engineer cannot and does not guarantee or warrant the accuracy of the unit prices as indicated. These unit prices are based upon the Engineer's general experience and may be subject to significant variations at the time actual bids are received.
3. This estimate has been prepared for the purpose of giving the client and engineer an approximate understanding of the general range of construction costs that may be expected for this project, based upon the information that the engineer had available at the time this estimate was completed. The Engineer makes no guarantee or warranty, expressed or implied, that ALL aspects of the construction effort expected for the project have been included, and the client is advised to budget appropriately for contingencies and items not covered or included in this preliminary summary.
4. If the client desires a more definitive cost estimate, actual construction bids, and/or, the services of a qualified construction estimator should be utilized by the client.
5. This estimate is based on the following described plan sheets:

| Sheet No. | Description | Date |
|-----------|-------------|------|
| List      | List        | List |

### COSTS EXCLUSIONS:

6. Costs associated with the building construction, including carports, dumpster, and mailbox.
7. Costs associated with the landscaping and irrigation.
8. "Soft costs" associated with the extension of power, gas, and telephone utilities into the project nor the costs associated with design, permits, and inspections.
9. Costs associated with the import of any trench backfill or pit run required to stabilize roadways except as noted for the minimum design section.
10. Costs associated with dewatering during construction, if required.

### QUALIFYING NOTES:

11. The earthwork quantity is approximate only, and should be verified at the time of bid preparation, based on approved final construction plans.
  - a. Stripping depths shown on the plans is based on the soils report recommendations. Actual field conditions may vary.
  - b. A depth of \_\_\_\_\_ inches from building finish floor elevation to subgrade has been assumed.
  - c. A \_\_\_\_\_ percent swell factor has been assumed from bank cut to truck yards.
  - d. A \_\_\_\_\_ percent shrinkage factor has been assumed from bank cut to compacted fill for on-site earthwork movement.
12. This estimate assumes excess fill material must be hauled away to a yet to be designated fill site. The client may wish to investigate the feasibility of "selling" or "giving away" the fill material so that it is hauled away by others.
13. This estimate does NOT include any costs associated with the purchase of off-site slope or utility easements.



|                                        |  |  |  |  |
|----------------------------------------|--|--|--|--|
| <b>SECTION 1 - LAND PURCHASE COSTS</b> |  |  |  |  |
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| <b>SECTION 2 - HARD COSTS</b> |  |  |  |  |
|-------------------------------|--|--|--|--|

|                                           |  |  |  |  |
|-------------------------------------------|--|--|--|--|
| <b>A. SITE GRADING/CLEARING/EARTHWORK</b> |  |  |  |  |
|-------------------------------------------|--|--|--|--|

| DESCRIPTION                                                            | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|------------------------------------------------------------------------|----------|------|------------|--------------------|
| Mobilization                                                           |          | LS   |            | \$0.00             |
| Clearing and Burning If Burning Allowed                                |          | AC   | \$2,750.00 | \$0.00             |
| Clearing and Chipping, or Haul Offsite (heavy forest)                  |          | AC   | \$6,600.00 | \$0.00             |
| Strip Topsoil and Stockpile On Site                                    |          | CY   | \$1.25     | \$0.00             |
| Replace Topsoil on Lots or Open Space Areas After Grading              |          | CY   | \$1.25     | \$0.00             |
| Strip Topsoil & Dispose Off Site/Turck Measure (excludes dump fees)    |          | CY   | \$11.00    | \$0.00             |
| Rough Excavation/Embankment (bank cut yardage only)(no off site)       | 3500     | CY   | \$2.75     | \$9,625.00         |
| port Structural Fill and Compact On Site (compacted fill volume x .35) | 360      | CY   | \$11.00    | \$3,960.00         |
| Export of Excess Material/Truck Measure (excluded dump fees)           |          | CY   | \$11.00    | \$0.00             |
|                                                                        |          |      |            | \$0.00             |
| <b>SUBTOTAL SECTION A:</b>                                             |          |      |            | <b>\$13,585.00</b> |

|                                 |
|---------------------------------|
| <b>B. SANITARY SEWER SYSTEM</b> |
|---------------------------------|

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| <b>C. WATER SUPPLY SYSTEM</b> |  |  |  |
|-------------------------------|--|--|--|

|                                         |  |  |  |  |
|-----------------------------------------|--|--|--|--|
| <b>E. PRIVATE STORM DRAINAGE SYSTEM</b> |  |  |  |  |
|-----------------------------------------|--|--|--|--|

| DESCRIPTION                                              | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|----------------------------------------------------------|----------|------|------------|--------------------|
| 18-Inch CMP/ADS Pipe                                     | 400      | LF   | \$26.00    | \$10,400.00        |
| Type II/48-Inch Catch Basins                             | 1        | EA   | \$1,300.00 | \$1,300.00         |
| Type II/72-Inch Catch Basins (maximum depth: 10 ft)      | 1        | EA   | \$6,000.00 | \$6,000.00         |
| Restrictor Device in Manhole (not including catch basin) | 1        | EA   | \$1,100.00 | \$1,100.00         |
| Fence on Pond (6-foot chain-link)                        | 520      | LF   | \$13.00    | \$6,760.00         |
| Pond Overflow Spillway                                   | 1        | EA   | \$1,700.00 | \$1,700.00         |
| Wet Pond Liner With 12 Inches Topsoil                    | 2300     | SF   | \$1.00     | \$2,300.00         |
| Hydroseed Ponds                                          | 1900     | SY   | \$0.25     | \$475.00           |
| Biofiltration Swales                                     | 1400     | SF   | \$1.00     | \$1,400.00         |
| Rip-Rap                                                  | 50       | CY   | \$20.00    | \$1,000.00         |
| Access Road to Retention/Detention Facility              | 50       | SY   | \$8.00     | \$400.00           |
| Bollards (average cost for set of 5 fixed/removable)     | 3        | EA   | \$1,300.00 | \$3,900.00         |
|                                                          |          |      |            | \$0.00             |
| <b>BTOTAL SECTION E:</b>                                 |          |      |            | <b>\$36,735.00</b> |

| F. PUBLIC ROADWAY IMPROVEMENTS |          |      |           |       |
|--------------------------------|----------|------|-----------|-------|
| DESCRIPTION                    | QUANTITY | UNIT | UNIT COST | TOTAL |

| G. ON-SITE SPECIFIC CONSTRUCTION COSTS |          |      |           |                     |
|----------------------------------------|----------|------|-----------|---------------------|
| DESCRIPTION                            | QUANTITY | UNIT | UNIT COST | TOTAL               |
| Retaining Walls (concrete)             | 3400     | SF   | \$35.00   | \$119,000.00        |
|                                        |          |      |           | \$0.00              |
| <b>SUBTOTAL SECTION G:</b>             |          |      |           | <b>\$119,000.00</b> |

**Gross Total:** \$169,320.00  
**With +30% Contingency Allowance:** \$220,116.00

MODEL INPUT FOR ALTCWITH CHOI ROAD & BLDG BOTH

$$A_p = 3.0 A_c \quad CN = 74$$

$$A_i = 4.40 A_c \quad CN = 98$$

$$T_c = 6.1 \text{ min}$$

3.5' DEEP, VERTICAL WALL POND.

$$V_{REQ} = 51,000 \text{ cf}$$

$$V_{SF} = 65,000 \text{ cf}$$

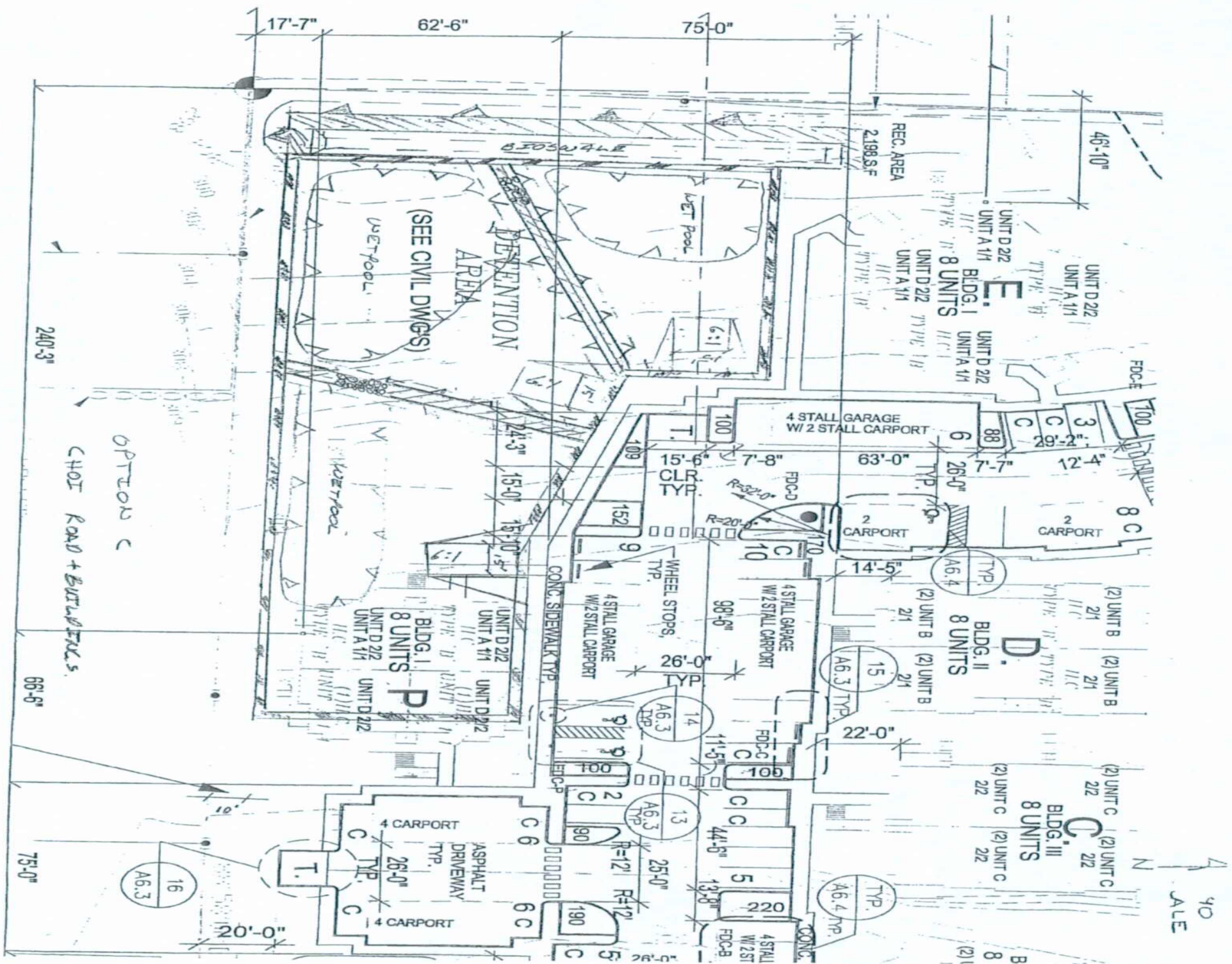
WILL HAVE TO DESIGN WEIR TO  
REPLACE SECOND ORIFICE.

$$V = 59,700 - 1,370(3) - (140+90)(25) = \quad \quad \quad \text{PROVIDED}$$

$$59,700 - 4,110 - 5,750 = \underline{49,840 \text{ cf}}$$

WATER QUALITY  $V = 8,000 \text{ cf}$  ,  $Q = 0.60$ 





BDH

9765.1 CHOI ADD

\* COST QUANTITIES FOR OPTION C:(ONLY ITEMS  
DIFFERENT FROM  
B)

RETAINING WALL AREA:

$$3,400 \text{ sf} + 75(10) = 3,400 + 750 = \underline{\underline{4,150 \text{ sf}}}$$

## \* EXCAVATION VOLUMES:

$$V_L = 3,200 + 75(70)(10)/27 = 3,200 + 1,944 \text{ CY}$$

$$\approx 5,100 \text{ CY}$$

$$V_{WQ} = 8,000 \text{ cf} \approx 300 \text{ CY}$$

$$V_T = \underline{\underline{5,400 \text{ CY}}}$$

$$* 2 \text{ BERMS} \quad V \approx 5,750 \text{ cf} \approx \underline{\underline{210 \text{ CY}}}$$

$$* \text{WETPOOL LINERS} \quad SA \approx 8,000 \text{ sf} / 3' \approx \underline{\underline{2,700 \text{ sf}}}$$

$$* \text{HYDRO SEEDING} \quad SA = 21,925 \text{ sf} \approx \underline{\underline{2,400 \text{ sf}}}$$

$$* \text{FENCING} \quad L = 520 + 150 = \underline{\underline{670 \text{ LF}}}$$



## PRELIMINARY DEVELOPMENT COST ESTIMATE

REVISED 2/2/98

PROJECT NAME: PACIFIC/CHOI PLACE OPTION C I

PROJECT NUMBER: 9765.1

LOCATION: \_\_\_\_\_

NUMBER OF LOTS: \_\_\_\_\_

CLIENT: \_\_\_\_\_

ACREAGE: \_\_\_\_\_

DATE OF ESTIMATE: \_\_\_\_\_

### GENERAL NOTES:

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5. This estimate is based on the following described plan sheets:

| Sheet No. | Description | Date |
|-----------|-------------|------|
| List      | List        | List |

### COSTS EXCLUSIONS:

6. Costs associated with the building construction, including carports, dumpster, and mailbox.
7. Costs associated with the landscaping and irrigation.
8. "Soft costs" associated with the extension of power, gas, and telephone utilities into the project nor the costs associated with design, permits, and inspections.
9. Costs associated with the import of any trench backfill or pit run required to stabilize roadways except as noted for the minimum design section.
10. Costs associated with dewatering during construction, if required.

### QUALIFYING NOTES:

11. The earthwork quantity is approximate only, and should be verified at the time of bid preparation, based on approved final construction plans.
  - a. Stripping depths shown on the plans is based on the soils report recommendations. Actual field conditions may vary.
  - b. A depth of \_\_\_\_\_ inches from building finish floor elevation to subgrade has been assumed.
  - c. A \_\_\_\_\_ percent swell factor has been assumed from bank cut to truck yards.
  - d. A \_\_\_\_\_ percent shrinkage factor has been assumed from bank cut to compacted fill for on-site earthwork movement.
12. This estimate assumes excess fill material must be hauled away to a yet to be designated fill site. The client may wish to investigate the feasibility of "selling" or "giving away" the fill material so that it is hauled away by others.
13. This estimate does NOT include any costs associated with the purchase of off-site slope or utility easements.



|                                        |  |  |  |  |
|----------------------------------------|--|--|--|--|
| <b>SECTION 1 - LAND PURCHASE COSTS</b> |  |  |  |  |
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| <b>SECTION 2 - HARD COSTS</b> |  |  |  |  |
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|                                           |  |  |  |  |
|-------------------------------------------|--|--|--|--|
| <b>A. SITE GRADING/CLEARING/EARTHWORK</b> |  |  |  |  |
|-------------------------------------------|--|--|--|--|

| DESCRIPTION                                                           | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|-----------------------------------------------------------------------|----------|------|------------|--------------------|
| Mobilization                                                          |          | LS   |            | \$0.00             |
| Clearing and Burning If Burning Allowed                               |          | AC   | \$2,750.00 | \$0.00             |
| Clearing and Chipping, or Haul Offsite (heavy forest)                 |          | AC   | \$6,600.00 | \$0.00             |
| Strip Topsoil and Stockpile On Site                                   |          | CY   | \$1.25     | \$0.00             |
| Replace Topsoil on Lots or Open Space Areas After Grading             |          | CY   | \$1.25     | \$0.00             |
| Strip Topsoil & Dispose Off Site/Truck Measure (excludes dump fees)   |          | CY   | \$11.00    | \$0.00             |
| Rough Excavation/Embankment (bank cut yardage only)(no off site)      | 5400     | CY   | \$2.75     | \$14,850.00        |
| Port Structural Fill and Compact On Site (compacted fill volume x .5) | 400      | CY   | \$11.00    | \$4,400.00         |
| Export of Excess Material/Truck Measure (excludes dump fees)          |          | CY   | \$11.00    | \$0.00             |
|                                                                       |          |      |            | \$0.00             |
| <b>SUBTOTAL SECTION A:</b>                                            |          |      |            | <b>\$19,250.00</b> |

|                                 |  |  |  |  |
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| <b>B. SANITARY SEWER SYSTEM</b> |  |  |  |  |
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| <b>C. WATER SUPPLY SYSTEM</b> |  |  |  |  |
|-------------------------------|--|--|--|--|

|                                         |  |  |  |  |
|-----------------------------------------|--|--|--|--|
| <b>E. PRIVATE STORM DRAINAGE SYSTEM</b> |  |  |  |  |
|-----------------------------------------|--|--|--|--|

| DESCRIPTION                                              | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|----------------------------------------------------------|----------|------|------------|--------------------|
| 18-Inch CMP/ADS Pipe                                     | 500      | LF   | \$26.00    | \$13,000.00        |
| Type II/48-Inch Catch Basins                             | 1        | EA   | \$1,300.00 | \$1,300.00         |
| Type II/54-Inch Catch Basins                             |          | EA   | \$2,750.00 | \$0.00             |
| Type II/72-Inch Catch Basins (maximum depth: 10 ft)      | 1        | EA   | \$6,000.00 | \$6,000.00         |
| Restrictor Device in Manhole (not including catch basin) | 1        | EA   | \$1,100.00 | \$1,100.00         |
| Fence on Pond (6-foot chain-link)                        | 670      | LF   | \$13.00    | \$8,710.00         |
| Pond Overflow Spillway                                   | 1        | EA   | \$1,700.00 | \$1,700.00         |
| Wet Pond Liner With 12 Inches Topsoil                    | 2700     | SF   | \$1.00     | \$2,700.00         |
| Hydroseed Ponds                                          | 2400     | SY   | \$0.25     | \$600.00           |
| Biofiltration Swales                                     | 1400     | SF   | \$1.00     | \$1,400.00         |
| Rip-Rap                                                  | 30       | CY   | \$20.00    | \$600.00           |
| Access Road to Retention/Detention Facility              | 50       | SY   | \$8.00     | \$400.00           |
| Bollards (average cost for set of 5 fixed/removable)     | 3        | EA   | \$1,300.00 | \$3,900.00         |
|                                                          |          |      |            | \$0.00             |
| <b>SUBTOTAL SECTION E:</b>                               |          |      |            | <b>\$41,410.00</b> |

| F. PUBLIC ROADWAY IMPROVEMENTS |          |      |           |       |
|--------------------------------|----------|------|-----------|-------|
| DESCRIPTION                    | QUANTITY | UNIT | UNIT COST | TOTAL |

| G. ON-SITE SPECIFIC CONSTRUCTION COSTS |          |      |           |                     |
|----------------------------------------|----------|------|-----------|---------------------|
| DESCRIPTION                            | QUANTITY | UNIT | UNIT COST | TOTAL               |
| Retaining Walls (concrete)             | 4150     | SF   | \$35.00   | \$145,250.00        |
|                                        |          |      |           | \$0.00              |
| <b>SUBTOTAL SECTION G:</b>             |          |      |           | <b>\$145,250.00</b> |

**Gross Total:** \$205,910.00  
**With +30% Contingency Allowance:** \$267,683.00

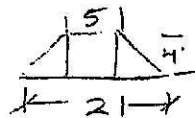
## OPTION C2:

KEEP POND WITHIN THE SAME HORIZONTAL EXTENT, & INCREASE DEPTH OF POND TO ACHIEVE 65,000 CF VOLUME.

IF POND IS 5' DEEP, LIVE STORAGE.

$$V_G = 5(17,050) \approx 85,250$$

$$V_{\text{BERMS}} = (13.4)(180) \approx 9,360 \text{ cf} \approx 350 \text{ cy}$$



$$V_{\text{RAMPS}} \approx [15' + 5(2)(2)] \cdot 5(5) \cdot 5 \approx 4,380 \text{ cf each} \\ \approx 160 \text{ cy} \\ \Sigma(3 \text{ RAMPS}) \approx 480 \text{ cy}$$

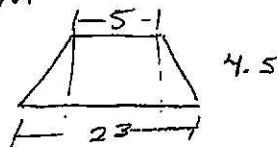
$$3(V_{\text{RAMP}}) \approx 13,130 \text{ cf}$$

$$V_T = 85,250 - 9,360 - 13,130 \approx 62,770 \text{ cf}$$

A LITTLE LOW,  $\therefore$  WOULD HAVE TO BE 5.5' DEEP

$$V_G = 5.5(17,050) \approx 93,775 \text{ cf}$$

$$V_{\text{BERM}} \approx [4(4)](180) = 10,080 \text{ cf} \approx 370 \text{ cy}$$



$$V_{\text{RAMP}} \approx [15' + 5.5(2)(2)] [5.5]^2 = 6,156 \text{ cf}$$

$$3(V_{\text{RAMP}}) = 18,468 \text{ cf} = 680 \text{ cy}$$

$$V_T = 93,775 - 18,468 - 10,080 = 65,227$$

$$\text{RETAINING WALL AREA} \approx 7(120) + 8.5(175) + 7.5(130) + 7(95) \\ \approx 3,970 \text{ SF} \approx 4,000 \text{ SF}$$



## PRELIMINARY DEVELOPMENT COST ESTIMATE

REVISED 2/2/98

PROJECT NAME: PACIFIC/CHOI PLACE OPTION C2

PROJECT NUMBER: 9765.1

LOCATION: \_\_\_\_\_

NUMBER OF LOTS: \_\_\_\_\_

CLIENT: \_\_\_\_\_

ACREAGE: \_\_\_\_\_

DATE OF ESTIMATE: \_\_\_\_\_

### GENERAL NOTES:

1. This estimate was prepared without the benefit of approved construction plans, and the Engineer makes no guarantee or warranty, expressed or implied, as to the accuracy of the quantities outlined.
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4. If the client desires a more definitive cost estimate, actual construction bids, and/or, the services of a qualified construction estimator should be utilized by the client.
5. This estimate is based on the following described plan sheets:

| Sheet No. | Description | Date |
|-----------|-------------|------|
| List      | List        | List |

### COSTS EXCLUSIONS:

6. Costs associated with the building construction, including carports, dumpster, and mailbox.
7. Costs associated with the landscaping and irrigation.
8. "Soft costs" associated with the extension of power, gas, and telephone utilities into the project nor the costs associated with design, permits, and inspections.
9. Costs associated with the import of any trench backfill or pit run required to stabilize roadways except as noted for the minimum design section.
10. Costs associated with dewatering during construction, if required.

### QUALIFYING NOTES:

11. The earthwork quantity is approximate only, and should be verified at the time of bid preparation, based on approved final construction plans.
  - a. Stripping depths shown on the plans is based on the soils report recommendations. Actual field conditions may vary.
  - b. A depth of \_\_\_\_\_ inches from building finish floor elevation to subgrade has been assumed.
  - c. A \_\_\_\_\_ percent swell factor has been assumed from bank cut to truck yards.
  - d. A \_\_\_\_\_ percent shrinkage factor has been assumed from bank cut to compacted fill for on-site earthwork movement.
12. This estimate assumes excess fill material must be hauled away to a yet to be designated fill site. The client may wish to investigate the feasibility of "selling" or "giving away" the fill material so that it is hauled away by others.
13. This estimate does NOT include any costs associated with the purchase of off-site slope or utility easements.

|                                        |  |  |  |  |
|----------------------------------------|--|--|--|--|
| <b>SECTION 1 - LAND PURCHASE COSTS</b> |  |  |  |  |
|----------------------------------------|--|--|--|--|

|                               |  |  |  |  |
|-------------------------------|--|--|--|--|
| <b>SECTION 2 - HARD COSTS</b> |  |  |  |  |
|-------------------------------|--|--|--|--|

|                                           |  |  |  |  |
|-------------------------------------------|--|--|--|--|
| <b>A. SITE GRADING/CLEARING/EARTHWORK</b> |  |  |  |  |
|-------------------------------------------|--|--|--|--|

| DESCRIPTION                                                               | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|---------------------------------------------------------------------------|----------|------|------------|--------------------|
| Mobilization                                                              |          | LS   |            | \$0.00             |
| Clearing and Burning If Burning Allowed                                   |          | AC   | \$2,750.00 | \$0.00             |
| Clearing and Chipping, or Haul Offsite (heavy forest)                     |          | AC   | \$6,600.00 | \$0.00             |
| Strip Topsoil and Stockpile On Site                                       |          | CY   | \$1.25     | \$0.00             |
| Replace Topsoil on Lots or Open Space Areas After Grading                 |          | CY   | \$1.25     | \$0.00             |
| Strip Topsoil & Dispose Off Site/Truck Measure (excludes dump fees)       |          | CY   | \$11.00    | \$0.00             |
| Rough Excavation/Embankment (bank cut yardage only)(no off site)          | 3500     | CY   | \$2.75     | \$9,625.00         |
| Import Structural Fill and Compact On Site (compacted fill volume x 1.35) | 1090     | CY   | \$11.00    | \$11,990.00        |
| Export of Excess Material/Truck Measure (excludes dump fees)              |          | CY   | \$11.00    | \$0.00             |
|                                                                           |          |      |            | \$0.00             |
| <b>SUBTOTAL SECTION A:</b>                                                |          |      |            | <b>\$21,615.00</b> |

|                                 |  |  |  |  |
|---------------------------------|--|--|--|--|
| <b>B. SANITARY SEWER SYSTEM</b> |  |  |  |  |
|---------------------------------|--|--|--|--|

|                               |  |  |  |  |
|-------------------------------|--|--|--|--|
| <b>C. WATER SUPPLY SYSTEM</b> |  |  |  |  |
|-------------------------------|--|--|--|--|

|                                         |  |  |  |  |
|-----------------------------------------|--|--|--|--|
| <b>E. PRIVATE STORM DRAINAGE SYSTEM</b> |  |  |  |  |
|-----------------------------------------|--|--|--|--|

# *Wetland Resources, Inc.*

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
(425) 337-3174  
Fax (425) 337-3045

## WETLAND DELINEATION REPORT

FOR

TAVIS PROPERTY

WETLAND RESOURCES, INC. PROJECT #97061

Prepared By:

*Wetland Resources, Inc.*  
9505 - 19th Ave SE, Suite 106  
Everett, WA 98208  
(425) 337-3174

For:

Granville Southern Corporation  
PO Box 2876  
Kirkland, Washington 98083-2878

July 29, 1997

0765

ATTACHMENT 12e



## SITE DESCRIPTION

A site investigation was conducted by *Wetland Resources, Inc.* on May 30 1997 to identify jurisdictional wetlands on this approximate thirteen acre parcel. The site is located west of Pacific Highway South in King County, Washington as part of Section 32, Township 22N, and Range 4E, W.M.

A moderately steep west aspect slope is located on the eastern portion of the site. The sloped area appears to have been disturbed within the last ten years, as indicated by sapling alder, sapling cottonwood, Himalayan blackberry, and an assortment of trash and debris. Near the center of the property is a large depressional area dominated by willows, yellow iris, reed canarygrass, speedwell, and patches of open water (Wetland A). Investigation of aerial photography indicates that the open water areas appear to have been excavated from a scrub-shrub wetland between the years of 1946 and 1960. Remnant islands of the scrub-shrub wetland still exist near the center of the open water area. The site investigation confirmed the excavated nature of the open water area of the wetland. The steep pond side slopes and earthen berms along the eastern portion of the wetland are all typical of excavated ponds. Himalayan blackberry is well established on pond spoils, also typical to disturbed areas in western Washington. This wetland extends off site to the north. The western portion of the property has a slight west aspect slope and is dominated by immature alder, mountain ash, and big-leaf maple in the overstory. Understory vegetation is comprised of salmonberry, Indian plum, vine maple, swordfern and trailing blackberry with patches of Himalayan blackberry. A small linear depressional wetland is located on the property's western boundary (Wetland B). It originates near the property's northwest corner and continues off-site approximately 300 feet south under an existing cyclone fence.

In King County wetlands and streams are classified according to the Environmentally Sensitive Areas Ordinance, KCC 21A.24, March 1996. Wetland A is greater than one acre in size and has two classes of vegetation. Wetlands with these characteristics are typically classified as Class 2. Class 2 wetlands require 50 foot protective buffers from their flagged wetland boundaries. Wetland B is less than one acre in size and has two classes of vegetation. Wetlands with these characteristics are classified under King County's Ordinance as Class 3. Class 3 wetlands require 25 foot buffers from their flagged wetland boundaries.

## WETLAND CLASSIFICATIONS - COWARDIN SYSTEM

The wetland and stream classifications, according to the Cowardin System developed by the U.S. Fish and Wildlife Service and published in Classification of Wetlands and Deepwater Habitats of the United States (USFWS, 1979), are as follows:

Wetland A: Palustrine: Unconsolidated Bottom, Mud, Permanently Flooded, *Excavated*.

Wetland B: Palustrine: Scrub-Shrub Wetland, Broad-leaved Deciduous, Saturated.

## WETLAND CLASSIFICATIONS - KING COUNTY

Under King County's Sensitive Areas Ordinance, Title 21A, the on-site wetlands are classified as follows:



Wetland A: Class 2: This wetland is greater than one acre in size and has two vegetation classes. It also has an open water class that was artificially created by excavation.

Wetland B: Class 3: This wetland is less than one acre in size and has two vegetation classes.

## WETLAND DETERMINATION REPORT

### Boundary Determination Findings

Methodology: On site, routine methodology as described in the Corps of Engineers Wetlands Delineation Manual, 1987 edition, was used for this determination, as required by King County. Under this method, the process for making a wetland determination is based on three sequential steps:

- 1.) Examination of the site for hydrophytic vegetation (species present and percentage cover);
- 2.) If hydrophytic vegetation is found, then the presence of hydric soils is determined;
- 3.) The final step is determining if wetland hydrology exists in the area examined under the first two steps.

### Vegetation

The Corps of Engineers Wetlands Delineation Manual, 1987 edition, states that more than 50 percent of the dominant species in each stratum present must be rated facultative or wetter to meet hydrophytic vegetation criteria.

Upland: The eastern half of this property is dominated by an immature forest, while the western half has been recently disturbed and is dominated by sapling trees and shrubs. The forested area includes deciduous trees such as big leaf maple (*Acer macrophyllum*, FacU), red alder (*Alnus rubra*, Fac), black cottonwood (*Populus trichocarpa*, Fac), and mountain ash (*Sorbus scopulina*, FacU). The shrub layer in the forested areas of the site is dominated by Himalayan blackberry (*Rubus discolor* FacU), salmonberry (*Rubus spectabilis*, Fac+), and Oso-berry (*Oemleria cerasiformis*, FacU). The forested understory is dominated by sword-fern (*Polystichum munitum*, FacU) and dewberry (*Rubus ursinus*, FacU). The upland area to the west is dominated by sapling red alder (*Alnus rubra*, Fac), sapling black cottonwood (*Populus trichocarpa*, Fac), Himalayan blackberry (*Rubus discolor*, FacU), and Scot's broom (*Cytisus scoparius*, NI). The majority of these species are rated Facultative or drier. This indicates that hydrophytic vegetation is not supported in the areas mapped as upland.

Wetlands: The vegetation within Wetland A is dominated by willows (*Salix* sp., Fac-Obl), salmonberry (*Rubus spectabilis*, Fac+), yellow iris (*Iris pseudacorus*, Obl), lady fern (*Athyrium filix-femina*, Fac), and speedwell (*Veronica americana*, Obl). Wetland B is dominated by salmonberry (*Rubus spectabilis*, Fac+), sedges (*Carex* sp., Obl), and skunk cabbage (*Lysichitum americanum*, Obl). The dominance of Facultative or wetter rated species indicates that hydrophytic vegetation is supported in the areas mapped as wetland.

### Soils

The Corps of Engineers Wetlands Delineation Manual, 1987 edition, states that hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (within 18 inches of the surface). The criteria for a "wetland soil" is that a hydric soil must support hydrophytic vegetation and wetland hydrology indicators must be present. Field indicators are used for determining whether a given soil meets the definition and criteria for hydric soils.



The soils underlying this site are mapped in the Soil Survey of King County Area Washington, 1973 edition as Alderwood gravelly sandy loam, 0 to 6 percent slopes and Norma sandy loam. Alderwood soils are nearly level with low runoff and a low erosional hazard. Norma soils are located in basins and glaciated uplands. Inclusions of Bellingham, Tukwila, and Shalcar soils are included in the Alderwood description. Norma is rated as a hydric soil.

Upland: Soil profiles were augured approximately eighteen inches deep. All of the tested upland soils are composed of a gravelly loam. The surface layer (0 to approximately 3 inches) is typically colored a grayish brown (10YR 3/2). From approximately three to greater than eighteen inches, the soils display a dark yellowish brown color (10YR 4/4). The soils throughout all of the profiles were dry to moist. At the time of inspection the upland areas show no evidence of reduced conditions. No redoximorphic features or oxidized rhizospheres were observed. Soil chromas are two or higher, indicating that hydrology does not persist in these soils for a significant period. The criteria for hydric soils is not present in the areas mapped as upland.

Wetland: The soils within the wetlands are very distinct from the adjacent upland soils. The soils within Wetland A are composed of a silt loam. The top three inches are colored a very dark brown (2.5Y 2/2) with strong redoximorphic features. From thirteen to greater than eighteen inches the soils are colored a very dark gray (2.5Y 4/2). The soils within Wetland B are composed of a silt loam to a fine sandy loam. The top thirteen inches are a black (2.5Y 2.5/1) silt loam. From thirteen to greater than eighteen inches the soils change to a very dark gray (2.5Y 4/2) fine sandy loam with strong redoximorphic features. All of the soils within the mapped wetland boundaries meet the criteria for hydric soils. Redoximorphic features and low soil chromas are evidence of reducing conditions. To further support this determination, the wetland soils were saturated at the time of inspection and support hydrophytic vegetation.

### Hydrology

The Corps of Engineers Wetlands Delineation Manual, 1987 edition, states that in order for wetland hydrology to occur on low permeability, poorly drained soils, the water table must be within 12 inches of the soil surface for longer than 5% (12.5 days) of the growing season of an average rainfall year.

Uplands: The upland areas were dry to moist in all of the augured soil profiles. There were no field indicators such as low chroma soils, gleying, hydrophytic vegetation, or mottling that would show that hydrology persists in the upland areas beyond the beginning of the growing season. The soils appear to be well drained to moderately well drained.

Wetlands: Within the wetland boundaries, the soils were saturated at the time of inspection. It is apparent that wetland hydrology exists within the mapped boundaries based on soil composition, drainage patterns within the wetlands, and the presence of hydrophytic vegetation. The hydrology appears to persist longer than 5% of the growing season to meet the criteria for wetland hydrology.

### USE OF THIS REPORT

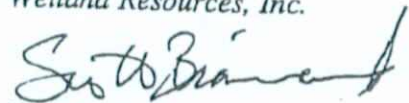
This wetland delineation report is supplied to Granville Southern Corporation as a means of determining on site wetland conditions, as required by King County's Department of Development and Environmental Services during the permitting process. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. Reports may be adversely affected due to the physical condition of the site and the difficulty of access which may lead to observation or probing difficulties.



The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

A handwritten signature in cursive script, appearing to read "Scott Brainard", with a long horizontal flourish extending to the right.

Scott Brainard  
Wetland Ecologist

Field Data Sheet  
WRI# 97061  
Field Investigation Date 5/30/97

| Pit           | Depth  | Texture | Color         | Species                      | %  | Status | Moisture                |
|---------------|--------|---------|---------------|------------------------------|----|--------|-------------------------|
| S1<br>Wetland | 0-3"   | sil     | 10YR 2/2      | <i>Salix lasiandra</i>       | 40 | FacW+  | saturated<br>at surface |
|               | 3-18+" | sil     | 10YR 4/2      | <i>Iris pseudacorus</i>      | 60 | Obl    |                         |
|               |        |         | strong redox. | <i>Phalaris arundinacea</i>  | 25 | FacW   |                         |
|               |        |         | features      | <i>Atherium filix-femina</i> | 10 | Fac    |                         |
|               |        |         |               | <i>Veronica americana</i>    | 5  | Obl    |                         |

Conclusion - Wetland - Criteria for hydric soils, hydrophytic vegetation, and hydrology met.

|           |        |       |          |                              |    |      |     |
|-----------|--------|-------|----------|------------------------------|----|------|-----|
| S2<br>Upl | 0-3"   | grsil | 10YR 3/2 | <i>Acer macrophyllum</i>     | 30 | FacU | dry |
|           | 3-18+" | grsil | 10YR 4/4 | <i>Sorbus scopulina</i>      | 20 | FacU | dry |
|           |        |       |          | <i>Rubus discolor</i>        | 50 | FacU |     |
|           |        |       |          | <i>Rubus spectabilis</i>     | 20 | Fac+ |     |
|           |        |       |          | <i>Polystichum munitum</i>   | 10 | FacU |     |
|           |        |       |          | <i>Oemlaria cerasiformis</i> | 20 | FacU |     |

Conclusion - Upland - Criteria for hydric soils, hydrophytic vegetation, and hydrology not met.

|               |         |     |               |                              |    |         |                         |
|---------------|---------|-----|---------------|------------------------------|----|---------|-------------------------|
| S3<br>Wetland | 0-13"   | sil | 2.5Y 2.5/1    | <i>Alnus rubra</i>           | 40 | Fac     | saturated<br>at surface |
|               | 13-18+" | fsl | 2.5Y 4/2      | <i>Acer circinatum</i>       | 20 | Fac-    |                         |
|               |         |     | strong redox. | <i>Rubus spectabilis</i>     | 40 | Fac+    |                         |
|               |         |     | features      | <i>Carex sp.</i>             | 30 | Fac-Obl |                         |
|               |         |     |               | <i>Lysichitum americanum</i> | 10 | Obl.    |                         |

Conclusion - Wetland - Criteria for hydric soils, hydrophytic vegetation, and hydrology met.

|           |        |       |          |                              |    |      |     |
|-----------|--------|-------|----------|------------------------------|----|------|-----|
| S4<br>Upl | 0-18+" | grsil | 10YR 3/4 | <i>Alnus rubra</i>           | 30 | Fac  | dry |
|           |        |       |          | <i>Rubus discolor</i>        | 70 | FacU |     |
|           |        |       |          | <i>Oemlaria cerasiformis</i> | 10 | FacU |     |

Conclusion - Upland - Criteria for hydric soils, hydrophytic vegetation, and hydrology not met.

|           |        |       |          |                        |    |      |     |
|-----------|--------|-------|----------|------------------------|----|------|-----|
| S5<br>Upl | 0-3"   | grsil | 10YR 3/2 | <i>Rubus discolor</i>  | 50 | FacU | dry |
|           | 3-18+" | grsil | 10YR 4/4 | <i>Cytis scoparius</i> | 20 | Ni   | dry |
|           |        |       |          | <i>Agrostis sp.</i>    | 10 | Fac? |     |

Conclusion - Upland - Criteria for hydric soils, hydrophytic vegetation, and hydrology not met.

| DESCRIPTION                                              | QUANTITY | UNIT | UNIT COST  | TOTAL              |
|----------------------------------------------------------|----------|------|------------|--------------------|
| 18-Inch CMP/ADS Pipe                                     | 400      | LF   | \$26.00    | \$10,400.00        |
| Type II/48-Inch Catch Basins                             | 1        | EA   | \$1,300.00 | \$1,300.00         |
| Type II/72-Inch Catch Basins (maximum depth: 10 ft)      | 1        | EA   | \$6,000.00 | \$6,000.00         |
| Restrictor Device in Manhole (not including catch basin) | 1        | EA   | \$1,100.00 | \$1,100.00         |
| Fence on Pond (6-foot chain-link)                        | 520      | LF   | \$13.00    | \$6,760.00         |
| Pond Overflow Spillway                                   | 1        | EA   | \$1,700.00 | \$1,700.00         |
| Wet Pond Liner With 12 Inches Topsoil                    | 2300     | SF   | \$1.00     | \$2,300.00         |
| Hydroseed Ponds                                          | 1900     | SY   | \$0.25     | \$475.00           |
| Biofiltration Swales                                     | 1400     | SF   | \$1.00     | \$1,400.00         |
| Rip-Rap                                                  | 50       | CY   | \$20.00    | \$1,000.00         |
| Access Road to Retention/Detention Facility              | 50       | SY   | \$8.00     | \$400.00           |
| Bollards (average cost for set of 5 fixed/removable)     | 3        | EA   | \$1,300.00 | \$3,900.00         |
|                                                          |          |      |            | \$0.00             |
| <b>BTOTAL SECTION E:</b>                                 |          |      |            | <b>\$36,735.00</b> |

| F. PUBLIC ROADWAY IMPROVEMENTS |          |      |           |       |
|--------------------------------|----------|------|-----------|-------|
| DESCRIPTION                    | QUANTITY | UNIT | UNIT COST | TOTAL |

| G. ON-SITE SPECIFIC CONSTRUCTION COSTS |          |      |           |                     |
|----------------------------------------|----------|------|-----------|---------------------|
| DESCRIPTION                            | QUANTITY | UNIT | UNIT COST | TOTAL               |
| Retaining Walls (concrete)             | 4000     | SF   | \$35.00   | \$140,000.00        |
|                                        |          |      |           | \$0.00              |
| <b>SUBTOTAL SECTION G:</b>             |          |      |           | <b>\$140,000.00</b> |

**Gross Total:** \$198,350.00  
**With +30% Contingency Allowance:** \$257,855.00



## WILDLIFE STUDY

FOR

PACIFIC PLACE

TOWNHOUSES

KING COUNTY, WASHINGTON

*Wetland Resources, Inc. Project #97061*

Prepared By:

*Wetland Resources, Inc.*  
9505 19th Avenue SE, Suite 106  
Everett, Washington 98208  
(425) 337-3174

For:

Granville Southern Corporation.  
8760-122nd. Ave. NE, Bldg. #2  
P.O. Box 2878  
Kirkland, WA. 98083-2878

March 25, 1998

## Wildlife Analysis

### Project Site Description

A wildlife study was conducted by *Wetland Resources, Inc.* in February, 1998 at a site proposed for the Pacific Place Townhouses. The property is approximately 13 acres in size and situated on the west side of Pacific Highway South (Highway 99) between South 279th St. and South 282nd St. in King County, Washington. The site is legally located as a portion of Section 32, Township 22N, Range 4E., W.M.. The objective of the wildlife study was to assess the current functions and values of the wildlife habitat present and determine species presence and potential occurrence.

There exists on the site mixed forest, scrub-shrub wetlands and open water areas. Each of these habitat types and the combinations they form have their own range of values to wildlife. A moderately steep west aspect slope is located on the eastern portion of the site. The sloped area appears to have been disturbed within the last ten years, as indicated by sapling alder, sapling cottonwood, Himalayan blackberry, and an assortment of trash and debris. Near the center of the property is a large depressional area dominated by willows, yellow iris, reed canarygrass, speedwell, and patches of open water (Wetland A). Investigation of aerial photography indicates that the open water areas appear to have been excavated from a scrub-shrub wetland between the years of 1946 and 1960. Remnant islands of the scrub-shrub wetland still exist near the center of the open water area. Site investigations confirmed the excavated nature of the open water area of the wetland. The steep pond side slopes and earthen embankment along the eastern portion of the wetland are all typical of excavated ponds. Himalayan blackberry is well established on pond spoils, which is also typical to disturbed areas in western Washington. This wetland extends off site to the north. The western portion of the property has a slight west aspect slope and is dominated by immature alder, mountain ash, and big-leaf maple in the overstory. Understory vegetation is comprised of salmonberry, oso-berry, vine maple, swordfern and trailing blackberry with patches of Himalayan blackberry. A small linear depressional wetland is located on the property's western boundary (Wetland B). It originates near the property's northwest corner and continues off-site approximately 300 feet south under an existing cyclone fence.

### Methodology

The area was first studied through examination of existing maps and aerial photographs to determine its general habitat layout and relationship to adjacent lands. Once gaining a preliminary overview of the site's condition and possible dynamics, a field reconnaissance was conducted. The area was investigated on foot by walking transects to locate and identify key wildlife components and determine the site's habitat quality, functions, values and species presence. The field study was conducted by visiting all areas of the site and surveying visually with binoculars and listening for auditory indicators.

### Wildlife Habitat Components

Any habitat type will contain a combination of features that give it a particular range of functions and values for wildlife. There exists on this site three habitat types that have value to wildlife. The vegetative and topographic associations they present



dictate in part the densities and diversity of wildlife found. It is these areas and the mosaic they form that deserve attention here.

Mixed Forest: Dominated by deciduous species the mixed forest component makes up approximately half of the vegetation found on site. There are two large contiguous blocks that account for the majority of this habitat type. The first block runs along the eastern edge of the site with an area of approximately 100,000 sq. ft.. The second covers the western half of the site with an area of approximately 219,375 sq. ft.. The mixed forest has a good multi-level canopy structure with a fairly dense understory. The overstory component is comprised of mature red alder, big-leaf maple and scattered evergreens. The understory vegetation is dominated by immature red alder, big leaf maple with salmonberry and Himalayan blackberry. This association provides a good balance of arboreal cover and foraging potential. The mixed forest component is sizable enough to provide a reservoir for some local species and certainly plays a role as a movement corridor through the area. Throughout the mixed forest there are habitat trees (snags) that are important habitat features for wildlife.

Open Water Wetland: This component is found in the north central portion of the site and is approximately 59,010 sq. ft. in size. The open water area with its associated vegetation forms a sizable habitat feature with a diverse vegetative structure. The western and northern edges of the open water are bounded by mixed forest and have a moderately well structured overstory of red alder, cotton wood and willow. The mid-story is dominated by semi-mature red alder and cottonwood, and the understory by salmonberry and Himalayan blackberry. The western edge of the this wetland is dominated by a mixture of scrub-shrub vegetation including sapling willow and cottonwood and Himalayan blackberry. There is a small stand of semi-mature cottonwood and willow along the water's edge. Large patches of broad-leaved cattail are found along the shoreline and in small islands or peninsulas throughout the open water area.

Scrub-Shrub Wetland: This wetland is found in the western portion of the site along the western border and totals approximately 5,990 sq.ft.. The wetland is surrounded by mixed and deciduous forest which provides it with a closed overstory. The wetland vegetation is dominated by salmonberry, sedges and skunk cabbage. As a result, there is not a well developed mid-story component present along the wetland corridor.

## **Wildlife Features**

The project site contains three special habitat features that enhance its value to wildlife. These characteristics can either result in the meeting of a specialized need for an individual species, or the fulfillment of a range of functions for entire communities. The presence of some special habitat features may very well dictate whether a species or group of species is utilizes the area. Found on this project were three features deserving special mention:

Wildlife Trees (Snags): Wildlife trees described as dead or partly dead trees are one of the most important and productive wildlife features present in a forest ecosystem. Wildlife trees provide a wide range of functions including nesting sites, forage potential and breaks in canopy coverage. Many species use cavities within wildlife trees for over-wintering, including hibernation by mammals. For some avian species the presence of snags are essential to breeding courtship rituals and territory establishment. There are wildlife trees located throughout the site. Of special



interest, are several clusters of wildlife trees, and some larger, heavily used trees found in different locations.

Two of the groups of wildlife trees are found in the eastern band of the mixed forest component between highway 99 and the mid-point of the site. The first group is located approximately 225' south of the Northeast corner and 50' west of the east boundary. The group is made up of four semi-mature red alders, with DBH's (diameter at breast height) ranging from 12" to 18". The second group is located 275' south of the northeast corner and 40' west of the eastern boundary. This group is made up of three larger trees (red alder and big-leaf maple) with a DBH range of 16" to 24". A third group of note is located just west of the open water wetland at 300' east and 100' south of the northwest corner. This, the largest cluster, is made up of six loosely associated trees including red alders and western hemlock. The DBH's range from 14" to 24". All of these groups provide roosting and nesting potential with some break in canopy cover and density. Within every group there were trees that contained one or more cavity nests excavated within them and/or showed sign of woodpecker spp. presence.

There are several solitary wildlife trees found on the site that with their larger size and evidence of heavy usage are of note. The first of these is a large fir snag (DBH 26") with two large excavated cavities and forage sign covering much of its exterior. The cavities are 4" in diameter at the top of the tree (tree height 30'). This tree is located approximately 100' west of the northeast corner along the north boundary. The second wildlife tree is located approximately 150' south and 50' east of the northwest corner. This forked tree stands 25' tall with a DBH of 26". The third tree sits approximately 200' north and 75' east of the southeast corner. This tree is 50' tall with a split at the crown and a DBH of 20". Both of these trees showed signs of forging and excavation.

Open Water Wetland: This wetland is a rich habitat providing a diverse vegetative complex. The composition provides a significant amount of edge which is beneficial to wildlife. Increased edge is often associated with increased species diversity, this was evident in the range of species detected. The forest component along the edge provides feeding perches for belted Kingfishers, the broad-leafed cattail; roosting and nesting sites for Red-winged Blackbirds and the open water; loafing and feeding sites for Bufflehead. Within the open water portion of the wetland there is a moderately well developed aquatic vegetative element. Such vegetation is necessary as a egg-laying substrate for amphibians. Amphibian egg masses were found attached to aquatic plants at the site.

Talus/Rocky Slope: Found in the northeast corner of the site forming the driveway embankment, this slope has attributes that are beneficial to amphibians and reptiles. Talus or rocky slopes are often utilized by amphibians and reptiles for habitation and egg laying. This embankment is situated in such a manner as to have one portion of it in a cool moist forested area and another in a southwest facing aspect. The cool moist portions of the slope are attractive to salamanders and the sunny southwest face is attractive to reptiles.

### **Condition and Function**

Existing: The study site in its present condition provides habitat for a diverse number of wildlife species. Within it exists a combination of mixed and deciduous forest, open water, shrub-shrub and grass meadow. This vegetative composition forms a mosaic of habitat types yielding a significant area of edge. Diversity of



wildlife species is believed to be closely related to edge area both rising and declining in unison. The area has the capacity to function as a reservoir for some resident communities and provide a movement corridor through the area for more transient species. At present there is evidence of use in the area by a moderate number of avian, mammalian and amphibian species. Use includes feeding, roosting and nesting by avian species and foraging and habitation by some mammalian and amphibian species.

The wildlife habitat on site is good, it is however less than optimal. Some areas have seen a high degree of alteration as a result of human intervention. There have been changes in vegetation and topography that have decreased the functional value of the site. Wildlife usage of the area is therefore held below those levels that would be expected and are possible. A large portion of the central area is a meadow that has been used as a trash dump/playground. This treatment has spoilt this section and compromised portions of those adjacent to it. Sections of the western bank and the northeast corner have been graded and a road put through it. This activity has altered the vegetation composition.

Post-Development: Some of the special habitat features lie outside of the areas to be developed and will remain relatively intact and unaffected. The most striking habitat, the open water wetland and its associated vegetation will remain within the protective buffer assigned to it. It appears that all three clusters of wildlife trees will remain as will two or three of the larger solitary wildlife trees. As a result, these areas and features should retain much of their current functions and values. They will continue to provide some nesting, foraging and over-wintering sites for various wildlife species. The mixed forest area will see an increase in fragmentation decreasing some of its role as a species reservoir and movement corridor.

### **Species of Concern**

Washington state and the federal government both have a system of legal designations for species of wildlife, plants and habitats that are seriously threatened with extinction or likely to become endangered within the foreseeable future. Species within these registers receive special considerations within policy and are of prime interest during Wildlife Surveys and Habitat Assessments. A search of state and federal databases for was carried out with the results as follows:

#### **Wildlife**

State: No species of endangered, threatened, sensitive or candidate status were located within the study site.

Federal: No species of endangered, threatened, proposed or candidate status were located within the study site.

#### **Habitats and Plants**

State: No species considered sensitive or habitats viewed as unique were located on or near the study site.

Federal: No species considered sensitive or habitats viewed as unique were located on or near the study site. Still waiting for data search results.

## Mitigation Suggestions

- Select plantings along habitat perimeters to form a hedge and limit intrusion into the areas.
- Select plantings within the development area to create additional habitat.
- Nesting boxes for water fowl and passerines in wetland areas.
- Eradication and Control of invasive species.

## Observed Species

### Avian:

- |                        |                          |
|------------------------|--------------------------|
| • Red-tailed Hawk      | • American Crow          |
| • American Robin       | • Belted Kingfisher      |
| • Northern Flicker     | • Black-capped Chickadee |
| • Ruby-crowned Kinglet | • House Wren             |
| • Dark-eyed Junco      | • Bufflehead             |
| • Hermit Thrush        | • Bushtit                |
| • Red-winged Blackbird | • Golden-crowned Kinglet |
| • Song Sparrow         | • Townsend's Warbler     |
| • Rufous-sided Towhee  | • Bewicks Wren           |
| • Yellow Warbler       |                          |

### Mammalian:

- |                    |              |               |
|--------------------|--------------|---------------|
| • Douglas Squirrel | • Opossum    | • Gopher spp. |
| • Raccoon          | • Aplodontia |               |

### Amphibian:

- |                    |                           |
|--------------------|---------------------------|
| • Western Treefrog | • Northwestern Salamander |
| • Bullfrog         |                           |

## Use Of This Report

This Wildlife Study is supplied to Granville Southern Corporation as a means of determining on site wildlife habitat conditions and the presence of wildlife species, as required by King County during the permitting process. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. Reports may be adversely affected due to the physical condition of the site and the difficulty of access which may lead to observation or probing difficulties.



The laws applicable to sensitive species and areas are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

A handwritten signature in cursive script, appearing to read "Cliff Palmer".

Cliff Palmer  
Wildlife Biologist/Wetland Ecologist



March 17, 1998

WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

JENNIFER M. BELCHER  
Commissioner of Public Lands

Cliff Palmer  
Wetland Resources Inc  
9505 19th Ave SE - Suite 106  
Everett WA 98208

**SUBJECT: # 97061 Pacific Place Townhouses -T22N, R04E, S32**

We've searched the Natural Heritage Information System for information on significant natural features in your project areas. Currently, we have no records for rare plants or high quality ecosystems in the vicinity of your projects. I have enclosed a list of rare plant species known to occur in the counties in which your projects are located.

The information provided by the Washington Natural Heritage Program is based solely on existing information in the database. In the absence of field inventories, we cannot state whether or not a given site contains high quality ecosystems or rare species; there may be significant natural features in your study area of which we are not aware.

The Washington Natural Heritage Program is responsible for information on the state's endangered, threatened, and sensitive plants as well as high quality ecosystems. We have begun to add information on selected groups of animals of conservation concern, such as freshwater mussels, butterflies, salamanders, and bats. We now make this information available in our reports along with information on rare plants and high quality ecosystems.

The authority for protection of animal species in Washington rests with the Department of Fish and Wildlife which manages and interprets data on wildlife species of concern in the state. To ensure that you receive information on all animal species of concern, please contact Priority Habitats and Species, Washington Department of Fish and Wildlife, 600 Capitol Way N, Olympia, WA 98501-1091, or by phone (360) 902-2543.

If you have the opportunity and technology, visit our new World Wide Web site at [www.wa.gov/dnr](http://www.wa.gov/dnr). If you have any questions, please do not hesitate to call me at (360) 902-1667, or by E-Mail: [sandra.moody@wadnr.gov](mailto:sandra.moody@wadnr.gov).

Sincerely,

Sandy Swope Moody, Environmental Coordinator  
Washington Natural Heritage Program

Enclosures **FOREST RESOURCES** ■ 1111 WASHINGTON ST SE ■ PO BOX 47016 ■ OLYMPIA, WA 98504-7016

FAX: (360) 902-1783 ■ TTY: (360) 902-1125 ■ TEL: (360) 902-1340  
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RECYCLED PAPER

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May 31, 1997

Michael Reid  
Granville Southern Corporation  
P.O. Box 2876  
Kirkland, Washington 98083-2878

Preliminary Report of Subsurface Exploration and Geotechnical Engineering Studies,  
Proposed Tavis Property Development, West side of Pacific Highway South at Roughly  
South 280th Street, King County, Washington Project Number: 8030-001

This report presents the results of our preliminary subsurface exploration and geotechnical engineering studies at the referenced site. The purpose and scope of these studies was outlined in our proposal to you dated March 27, 1997. Written agreement to proceed with our studies was completed on April 28, 1997, and the fieldwork was started on May 1, 1997.

The property under consideration is located on the west side of Pacific Highway South (State Route 99) and extends westward approximately 830+/- feet, terminating at the rear of the properties fronting on the east side of 13th Avenue South. The northern edge of the property terminates at the rear of properties fronting on the south side of South 279th Street. The south property line is defined by adjacent properties fronting on South 282nd Place and 15th Avenue South. The parcel covers an area of approximately 12+ acres in size and, to varying degrees, has been previously developed. We understand that it is your desire to re-develop the property for multiple residential usage with associated street improvements. The presence of a pond-type area and areas of known fill are key considerations in the final development plan for the property. Although development plans are only conceptual at this time, it is anticipated that a moderate amount of regrading may be associated with site development, including road development and site drainage.

#### Subsurface Exploration Program

We explored site subsurface conditions by excavating and logging soils exposed in a series of 21 exploration pits across the site, viewing soils exposed in slopes and road cuts in the site area, and reviewing information in our files. The exploration pit locations are shown on the attached Site Sketch, Figure 1 of this report.



The exploration pits were excavated using a rubber-tired backhoe and extended to a maximum depth of 21 feet. Soils exposed in the exploration pits were examined and logged by an engineering geologist subcontracted to this office. The exposed soils were examined and the difficulty of excavation evaluated as an indication of the relative soil density. The soil strata encountered are shown on the attached Exploration Pit Logs, Figures 3 through 9. The soil strata shown on the logs were observed at spot locations across the site. Actual subsoil conditions may vary between pits and/or as exposed in excavations.

At the time of our site work no topographic map of the property was available. Slope angles, heights and distance measurements used in this report were established using hand held equipment, ie, tape measure, Brunton compass, inclinometer, and optical range finder, and should be considered approximations. Figures 1 and 2 were developed based on hand held equipment and limited data and should be considered as being an approximate representation of the site and indicated features.

#### Site and Subsurface Conditions

From the guard rail along Pacific Highway South the property drops fairly steeply (roughly 2H to 1V) downward for a distance of about twenty to forty feet, at which point, on the south two-thirds of the property, the slope flattens to gradients of moderate steepness which continue to flatten to the west for a total distance of about two to three hundred feet. In the northern third of the site adjacent to Pacific Highway South, a portion of the property has been filled with soil and concrete and asphalt rubble to develop driveway access into the property. This fill is variably sloped for a distance of about 150 to 180 feet from the highway, at which point, the face of the fill takes on a steep slope downward to the west. From the toe of the west facing slopes, down from the highway, to the west property line the ground surface is fairly flat to slightly rolling.

As shown on Figure 1, a pond-like feature occupies the north central portion of the property. From our field observations, it is suspected that the size of the pond fluctuates greatly both seasonally and during periods wetter and dryer weather. These observations tend to support information from you that this feature was excavated and reportedly vanishes or is greatly reduced in size later in the normally dry season. The boundaries shown on Figure 1 are as estimated at the time of our fieldwork.

To the south of the "pond" area and extending to the south property line is a nearly level, extensively filled area. The fill in this area appears to be on the order of six to seven feet thick and comprised of a variable mixture of soil; concrete, brick and asphalt rubble; wood; logs and miscellaneous debris.

Vegetation on the east and west thirds of the property consists, for the most part, of an openly wooded, mixed age "forest" of evergreen and deciduous trees over an open to dense, mixed understory of brush, small trees, vines and weeds. The central third of the site, south of the "pond", is covered with grass and weeds, with a dense growth of berry vines along the east side of the fill and "pond".

Materials of both pre- and post-glacial age were identified on the property, their general locations are shown on Figure 2. All soil contacts shown on Figure 2 should be considered as approximate or estimated and subject to modification during additional field exploration or grading observation.

Ignoring the defined areas of fill, in general terms, it appears that the northeast portion of the property is underlain by recessional outwash (primarily sand and gravelly sand) while the southeast portion of the site, adjacent to the highway, is underlain by glacial till, an ice deposited, generally dense mixture of silt, sand and gravel. West and down slope of the area underlain by glacial till is what appears to be advance outwash, a pre-glacial mixture of sand and gravel having a variable silt content. Extending north-south through the central portion of the site is a large deposit of interbedded sand, gravel, and sand and gravel which appears to occupy an outwash channel. This material also forms the berm shown on Figures 1 and 2 and is suspected to be a combination of both advance and recessional outwash, with the recessional materials deposited in a channel carved into the advance materials. Under a two to five foot thick mantle of possible weathered till and recessional outwash, the western third of the property appears to be underlain by glacial till interbedded with glacial drift-like materials. Glacial drift can be of similar composition to glacial till, which in this case it is, deposited in association with the glacier but not necessarily by glacial ice.

For purposes of future site grading, it should be noted that in both the advance and recessional outwash there scattered large cobbles and very large boulders.



On a gross scale it is our opinion that the site soils are generally similar that indicated on geologic and Soil Conservation Service (SCS) maps of the area. The geologic maps "Geology of the Poverty Bay Quadrangle, Washington" (USGS, 1961) and "Geology and Ground Water Resources of Southwestern King County, Washington" (Water Supply Bulletin No. 28, Washington State Department of Water Resources, 1969) indicate that glacial till is the primary material underlying the site with the "pond" and fill area in the south center of the site possibly being an extension of glaciolacustrine deposits (materials deposited in glacial lakes) which, on the maps, have an approximate contact indicated near the study site's south property line. Soil Conservation Service maps ("Soil Survey, King County Area, Washington", 1973) indicate that the major portion of the site is underlain by Alderwood type soils, which have a glacial till parent material, with soils in the "pond" area and along the pond outlet ditch, west of the "pond", identified as soils of the Norma series. The SCS indicates that Norma-type soils develop in alluvium and are generally found in basins on glaciated uplands and stream bottoms.

It is our opinion that differences between the reference maps and our field observations is more a result of mapping scale and not inconsistencies in mapping or site specific work.

No ground water was observed in the exploration pits adjacent to the highway or in pits 15 and 19. Across the rest of the property ground water was found generally between a depth of about 2.5 and 7 feet. A water well is located about 200 feet north of pit 6. This well has a diameter of approximately four feet and an apparent depth of 31 feet. The 12 foot depth to ground water at pit 6 appears similar to the measured 16 foot depth to water level in the well.

## CONCLUSIONS AND PRELIMINARY RECOMMENDATIONS

### General

Based on the results of our subsurface exploration program and review of associated materials, it is our opinion that, from a geotechnical view, the property is generally suitable for the type of development proposed. The existence of the large fills in the northeast and south central portions of the site and the presence of the "pond" and associated wet and occasionally organic laden soils, and apparent elevated ground water levels (although perhaps seasonally elevated) complicates the development considerations from a foundation support, earthwork and site drainage perspective. The response of the existing fill and loose/soft soils to loadings imposed by placement of any additional fill and building foundations must be considered. As site development and building design plans become more defined, we anticipate that it may be beneficial to more



closely explore the subsurface conditions in the fill areas and in areas adjacent to and south of the "pond". If such additional explorations are timed for the normally dry season they could be particularly useful in evaluation of foundation construction options in the areas of softer soil and in those areas presently showing elevated ground water levels.

We caution that, although not strictly a geotechnical consideration, an additional consideration for site grading is the presence of AT&T and U S West fiber-optic telephone cables laid parallel with Pacific Highway South between our exploration pits 1 through 5 and the highway. Care should be taken to assure that site work does not destabilize up slope areas that could damage the fiber-optic cable or highway.

Additional considerations for site development design are what appear to be small, vegetation covered piles of soil, trees or debris in the southwestern portion of the site, vegetation in this area may cover undesirable materials. Consideration will also be required in the "pond" area with regard to the water source and disposal, and, if the "pond" is to be maintained as part of the development, control of potential water level fluctuations.

With regard to the existing water well on the property, if this well is to be abandoned it should be backfilled and sealed in full accordance with Washington State Department of Ecology standards and regulations and the abandonment reported to the Department of Ecology.

Our studies did not include the testing for possible methane gas generation from the existing site fills. If structures are built over the existing fill areas, without removing the existing fill, as a safety consideration, we recommend that provisions be made to assure that all crawl spaces and enclosed areas are well ventilated to prevent the possible build-up of methane gas.

The following preliminary recommendations are provided to aid in addressing preliminary design considerations for the development of the site and should be incorporated into the site planning, design and construction considerations.

#### **Site Preparation and Grading**

##### Water Related Concerns

Only minor storm water related problems are anticipated if site grading and preparation are undertaken during the normally drier portions of the year. If site work is undertaken during wet

weather the near surface sands and silty soils may become over-saturated and temporarily unworkable. If the site work is undertaken during wet weather, the contractor should be fully prepared to deal with soil and water problems normally encountered in these materials during wet weather work including the filtering of runoff, as needed, to prevent the siltation of down slope areas. Additionally, we recommend that the contractor be fully prepared to deal with potentially large amounts of runoff from the roadway and parking areas until these areas are paved and the storm drains are operational. It should be anticipated that silt fences and other erosion control devices could be used to control sediment transport from leaving the site.

A significant water source is a storm drain pipe that discharges onto the slope from under Pacific Highway South. This pipe is located in the vicinity of pit 4. A small gully has formed from the uncontrolled discharge from this pipe.

Depending upon the final site grades and weather conditions it is possible that springs or seeps may develop in some areas and in excavations, particularly on the western two-thirds of the site. In that we are unable to predict where or when this might occur we recommend that any development of springs or seeps be treated as a construction/maintenance problem and addressed at that time. Due to the initially apparent randomness of ground water depths, for planning purposes it should be anticipated that ground water may be encountered in any excavations made for foundations, basements, utility trenches or other similar subsurface excavations. Additionally, water seepage can cause failure of the excavation walls and the contractor should be observant for possible cave-in or other hazardous conditions and provide shoring for all cuts and excavations in accordance with local, state, and federal regulations. All contractors working on the project should be advised of the potential for and be prepared to deal with any water related problems during construction.

To preclude the possible build-up of ground water or storm runoff in the soils adjacent to the structures, it is recommended that a four inch diameter perforated, rigid pipe be placed, perforations down, around the outside of the building foundations at or below the footing subgrade elevation. All of the drainage system should be bedded in a drainage sand and gravel and designed to carry any accumulated water away from the structure to the storm drainage system or other appropriate discharge area. Roof drainage should not be connected to the footing or other subsurface water drains.



All runoff from roofs, driveways, paved areas and other hard surfaced areas should be intercepted, collected and disposed of away from structures and site slopes, and discharged where the water will not effect down slope structures, walls or properties. Additional location specific recommendations may be required to address special considerations if the "pond" area is to be drained and maintained in a "dry" condition.

#### Preliminary Development Recommendations

Generally under all buildings, pavements and fill areas, it is recommended that all sod, organic soil, existing fill and debris be removed. However, we understand that due to apparent fill thicknesses this may not be practical in all areas and alternative design considerations may be needed depending on the final development plan. Over most of the site it is anticipated that stripping depths of six inches to a foot will be generally adequate to remove topsoil and similar materials. Grubbing to depths of three to four feet may be required to remove larger root balls. If the existing fill in the south central portion of the site is to be removed, stripping to depths on the order of six to eight feet should be expected to remove the fill with an additional one to two feet of depth anticipated to remove any possible underlying topsoil or organic laden layers.

Stripped soils, contaminated with organics or debris, should be wasted off site or used in landscape areas. Stripped granular soils free of organics and debris, or other deleterious materials, may be used as structural fill subject to the following considerations.

Following stripping of the site, and prior to the placement of any fill, the exposed subgrade should be proof rolled and compacted using a vibratory roller developing a dynamic rating of at least 25,000 pounds. Compaction of the stripped subgrade should be continued until field density tests show that a minimum compaction of 95% of the maximum dry density, as determined by ASTM method D-1557, has been achieved in all building, driveway, and parking areas. Any soft or weaving areas disclosed during proof rolling should be excavated and replaced with compacted structural fill. Areas which are to be filled to bring the building or pavement grades up to the desired elevation should be filled with compacted granular material free from roots, trash or other deleterious materials. It is anticipated that site fill materials may be a mix of native and imported materials. During wet weather the siltier portion of the on site soils are not expected to be suitable for use as fill. These soils are sufficiently fined grained, such that with the addition of small quantities of water they become overly saturated and are difficult or impossible to compact to the desired density. As a result, we recommend that all site grading and preparation be undertaken



and completed during dry weather. If grading in building or pavement areas is necessary during wet weather, we recommend that all excavated soil be removed from the site and that materials used as structural fill (fill placed on slopes or under buildings or pavements) consist of free draining sand and gravel with not more than 5.0% fines, material passing a U.S. No. 200 sieve. (Note: As the site soils are better exposed for observation and evaluation during grading, it may be possible that some of the native sands and gravels containing variable amounts of silt can be modified for usage with approval of the geotechnical engineer.) All imported fill material should conform to the above recommendation regardless of the weather.

In areas of fill placement, fill slopes should not be steeper than 2H to 1V for fill placed in accordance with the requirements of appendix chapter 33 of the Uniform Building Code (1994). For uncontrolled fills of moderate quality material slopes should be flatter than 3 or 4H to 1V. In areas where steeper slopes are required retaining structures or soil reinforcement should be provided. In areas where fills are to be made on slopes steeper than 5H to 1V the subgrade should be benched and prepared in accordance with UBC (1994) requirements prior to fill placement. Benches should be cut at a maximum vertical height of two feet.

All structural fill should be placed in layers approximately 8 inches in loose thickness, conditioned to a moisture content suitable for compaction, and compacted to 95% of the maximum dry density as determined by ASTM D-1557. Field density tests should be made at a frequency adequate to assure that the required compaction is achieved.

A special case for fill is the concrete and asphalt rubble in the northeastern portion of the property. This material currently underlies an access roadway. If this material is re-distributed in the current general area as an embankment fill for an entrance roadway and is compacted to a generally void free configuration with a large vibratory roller, is expected to provide a suitable embankment material to support a roadway alignment. A surfacing layer of a debris free pit-run sand and gravel should be placed between the compacted rubble fill and the pavement section. This pit-run layer should be sufficiently thick to contain any utilities that extend through this area.

#### **Preliminary Foundation Design**

The proposed structures may be supported on spread footings bearing on the medium dense to dense native sandy soils or on properly placed and compacted structural fill bearing on the medium dense to dense native soils. Due to the loose condition and large amount of debris, the

existing fill material is considered unsuitable and will not provide adequate foundation support for structures where normally anticipated settlements of an inch or less are required.

All foundations should be designed in accordance with Uniform Building Code requirements, as modified by local codes and regulations, in effect at the time of construction, for structures within seismic zone 3 as defined by the Uniform Building Code (1994) or the UBC seismic zone in effect at the time of construction.

Spread footing foundations should have a minimum embedment of 18 inches below the lowest adjacent finished grade except where the footings are on or adjacent to a downward slope. Where foundations are constructed on or adjacent to slopes the foundations should be designed to bear a minimum of five feet horizontally back of the soil face of the slope and have a minimum vertical embedment of three feet below the finished soil grade. Continuous footings for multi-family structures should have a minimum width of no less than 18 inches and isolated footing should have a minimum width of no less than 24 inches regardless of the resulting bearing pressure. For single-family structures continuous footings should have a minimum width of no less than 16 inches and isolated footing should have a minimum width of no less than 20 inches regardless of the resulting bearing pressure.

It is recommended that all foundation excavations be inspected, prior to placing concrete, to verify that the bearing surface has been properly cleaned and prepared. Bearing surfaces should be firm and free of disturbed, sloughed or water-softened soil prior to concrete placement. We recommend that, following excavation of the foundation areas to the subgrade elevation, the exposed subgrade be recompacted to assure a firm bearing surface without pockets of loose material. For spread footing foundations designed and constructed as outlined above the following allowable soil bearing pressures may be used.

| <u>Material</u>                                        | <u>Allowable Soil Bearing Pressure, psf</u>          |
|--------------------------------------------------------|------------------------------------------------------|
| Existing fill                                          | Unsuitable without extensive clean up and compaction |
| Loose, sandy soils-present condition                   | 500                                                  |
| Loose, sandy soils-after preparation as outlined above | 2000                                                 |
| Structural fill placed and compacted as outlined above | 2000                                                 |



|                                                 |      |
|-------------------------------------------------|------|
| Medium dense to dense in situ native sandy soil | 2000 |
| Dense to very dense glacial till or sandy soil  | 4000 |

We estimate that total settlement for foundations designed and constructed as outlined above and bearing on the medium dense to very dense in situ native soil or structural fill placed as previously recommended will be an inch or less, with differential settlement between similarly loaded foundations potentially approaching the total settlement. It is anticipated that most settlements in these mineral soils will occur as the foundations are loaded. Failure to properly place structural fill or prepare the subgrade areas may increase settlement resulting from loading and/or shaking resulting from an earthquake.

#### **Drainage Considerations**

With the variable depth to ground water, crawl spaces may experience wet conditions in the lower elevation areas unless attention is paid to drainage and excavation elevations. The attached Subdrain and Backfill Schemes are included to provide guidance for establishing drainage around residential structures. Overall site drainage must be maintained such that the subsurface drains around the structures have a gradient to drain accumulated waters.

#### **Slabs-on-Grade**

Slab-on-grade floors, may be supported on the medium dense to dense in situ native soils, or on properly placed and compacted structural fill bearing on these materials. Slab-on-grade floors cast on the existing fill without designed structural support may be subject to settlement damage. A capillary break/drainage layer consisting of four inches of pea gravel, or clean crushed rock should be placed below the floor slab. The capillary break material should contain less than 1.0% material passing a U.S. No. 200 sieve and less than 4.0% material passing a U.S. No. 10 sieve. A vapor barrier should be placed between the capillary break and the floor slab. If a sand cushion is placed between the capillary break material or vapor barrier and the slab, it should not contain free moisture when the slab is constructed. Excess moisture in the cushion could cause impervious floor coverings to bubble.

#### **Preliminary Pavement Design**

The following pavement designs are based on the completion of all site preparation and grading as previously recommended. Depending on the final site development plan and associated site grades additional specific recommendations, beyond those presented below, may be required in



the areas of existing fill. Following smoothing of the surface for drainage and proof rolling, the on site sands should provide a desirable sub-base for supporting the recommended base course and surface course layers. In the fill area at the northeast corner of the property, the near surface fill appears to have been fairly well compacted, however, due to variability of the fill material, we recommend that if the fill is not substantially altered, a sub-base course of six inches of compacted Class A gravel base or clean pit run sand and gravel be placed on the prepared subgrade in the fill areas prior to construction of the following tabulated pavement sections to provide similar pavement structural support to that provided by the denser native sands. Similarly, in the fill area south of the "pond" we recommend that a sub-base course of twelve inches of compacted Class A gravel base or clean pit run sand and gravel be placed on the prepared subgrade prior to construction of the recommended pavement section. Some settlement, with time, of the surface of the fill area should be expected, particularly south of the "pond". This will change the drainage characteristics of the paved area, but will have little affect on specific wheel load related performance.

| <u>Use Area</u>                                                                                   | <u>Pavement Section</u>    |                |
|---------------------------------------------------------------------------------------------------|----------------------------|----------------|
|                                                                                                   | <u>Crushed Base Course</u> | <u>Asphalt</u> |
| Auto parking, light use driveways                                                                 | 4"                         | 2"             |
| Access subject to several times daily<br>truck or bus traffic or other heavy<br>or repeated loads | 5"                         | 3"             |

The gravel base and crushed base course materials should conform to WSDOT Standard Specifications and be compacted to at least 95% of the maximum dry density as determined by ASTM standard method D-1557. The asphaltic concrete should conform to WSDOT Class B requirements.

NOTE: The above pavement recommendation is not intended for nor should it be expected to support construction traffic without apparent or future distress.

#### Construction Considerations

Due to ground water flows and potential caving conditions we recommend that as a preliminary guideline for temporary cuts, temporary slopes be made no steeper than 2H to 1V in the loose to medium dense, sandy site soils or filled areas (new or existing). Temporary cuts made in the

dense to very dense glacial till or sands and gravels free from any water flow may be made at 1.5 or 1H to 1V. Temporary slopes or excavations should be benched as required by safety regulations in effect at the time of construction. These temporary slope recommendations are for native soils and engineered fill materials. It should be anticipated that flatter slopes and/or shoring may be required in wet weather or if ground water seepage is encountered or if soil conditions other than those previously described are encountered. The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. Such regulations are strictly enforced and, if not followed, the owner, the contractor, or the earthwork or utility subcontractors could be liable for substantial penalties. The contractor should be made responsible for the stability of all excavations and slopes during construction because he is continually on site and can observe the stability of the exposed soils. In addition, the contractor should be prepared to shore any unstable slope area and provide shoring as required by local, state, or federal laws or codes.

In no case should excavated soils be placed on the slope or stockpiled within one half the slope height of the top of any existing or excavated slope, trench, rock wall or retaining structure. Failure to comply with these guidelines may lead to destabilization of the slope.

The site soils may be easily eroded by channelized water or sheet flow storm runoff. Therefore, it is recommended that all site preparation and excavation work be completed during the normally drier portion of the year. During periods of heavy rainfall, ditching should be used to divert water away from stripped areas and visqueen should be used to cover the slopes and soil stock piles to aid in preventing excessive surface erosion. This covering also aids in preventing infiltration of water into the unprotected soils. All disturbed soil areas and slopes should be replanted with fast-growing, deep-rooted grass, shrubs and other ground cover as soon after final grading as possible. If the vegetation is not fully established prior to the onset of wet weather, the slopes should be covered with visqueen to aid in preventing excessive erosion and water infiltration.

It should be anticipated that there could be a number of additional site development or construction problems, particularly, if the earthwork has not been completed and the site properly protected at the onset of wet weather. It is recommended that the architect, structural engineer or



their representative make periodic inspections of all excavations and slopes to provide early recognition and recommendations to correct potential construction problems.

#### REPORT LIMITATIONS

This report has been prepared for the exclusive use of the Granville Southern Corporation and their agents for use in planning of the referenced development. The conclusions and recommendations in this report are based on our interpretation of site conditions as they presently exist, anticipated future construction activities, and the expectation that the exploratory efforts adequately define the subsurface conditions throughout the building site. The soil conditions described in this report and the conclusions and recommendations contained in this report are provided for this specific site only and should not be expanded for use on adjacent properties without additional exploration and review of those sites by our firm. The data and report should be provided to prospective contractors for their bidding or estimating purposes, but the report conclusions and interpretations should not be construed as a warranty of the subsurface conditions. There are possible variations in subsurface conditions. In the event that the scope or location of the project should change or subsurface conditions different from those encountered during this study be observed or suspected, we should be advised. At that time a review of the changed conditions will be made, and alternative or remedial recommendations given as required.

NOTE: Although we have explored subsurface conditions as part of this study, we have not conducted analytical laboratory testing of any samples obtained, have not evaluated the site for the potential presence of contaminated soil, and have not evaluated or addressed ground water conditions or concerns except as noted in this report. The evaluation of possible environmental or geo-environmental considerations is beyond the scope of this report.

The owner and the contractor should make themselves aware of and become familiar with applicable local, state, and federal safety regulations, including current OSHA excavation and trench safety standards. Construction site safety generally is the sole responsibility of the contractor. The contractor shall also be solely responsible for the means, method, techniques, sequences, and operations of construction operations. The firm, J. Keith Cross, P.E., Geotechnical Engineering Consultant (including consultants) is providing the preceding information and recommendations solely as a service to the Granville Southern Corporation. Under no circumstances should the provision of this information or recommendations be construed to mean that the firm J. Keith Cross, P.E., Geotechnical Engineering Consultant (including consultants) is

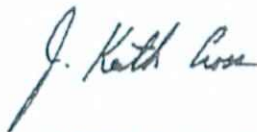


assuming responsibility for construction site safety or the contractor's activities; such responsibility is not implied and should not be inferred.

Within the limitations of scope, schedule, and budget for this work, it is warranted that the work has been done in accordance with generally accepted practices followed in this area at the time this report was made. No other warranty, expressed or implied is made.

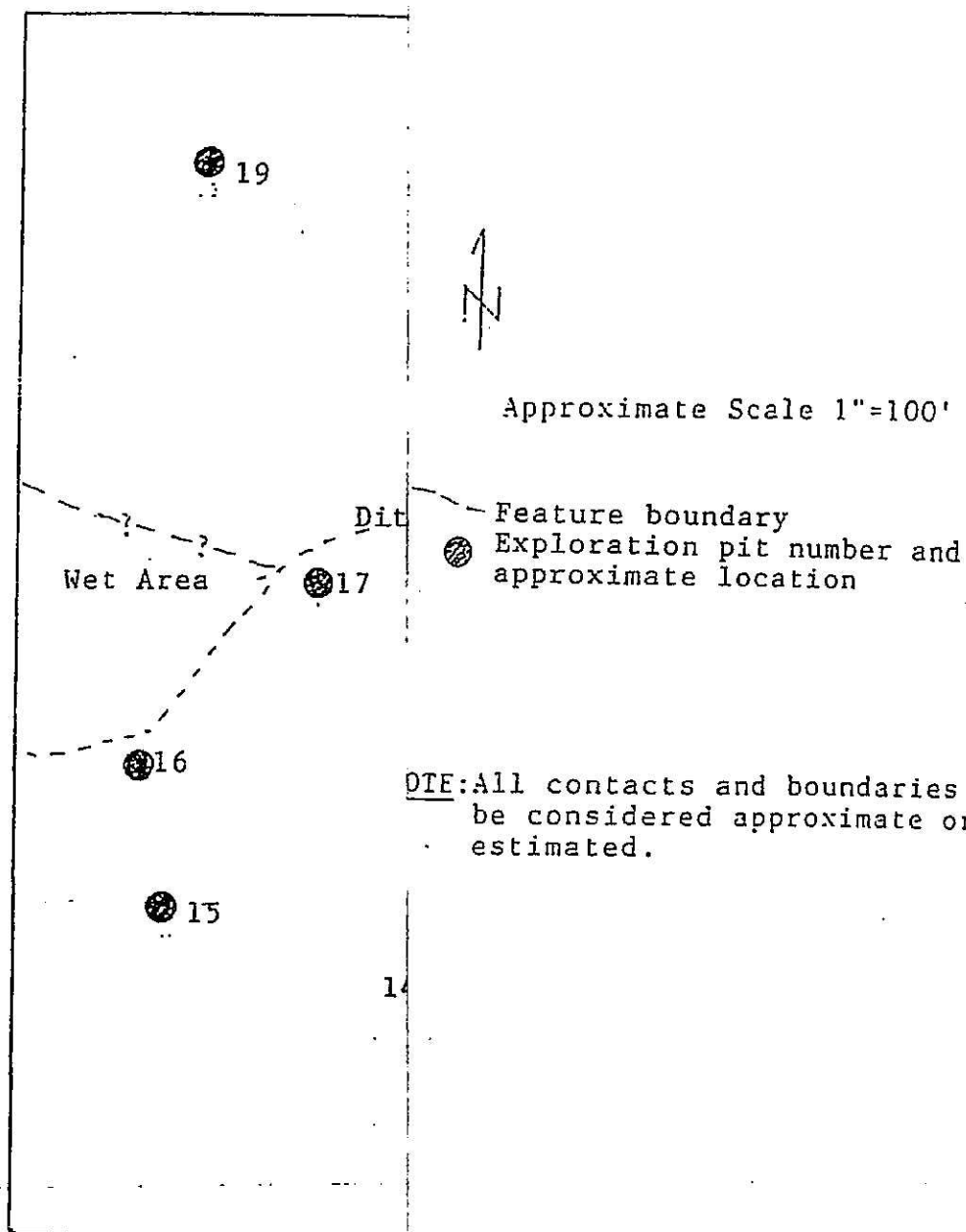
Should you have any questions or concerns which have not been addressed, or if we may be of additional assistance, please call.

Yours very truly,



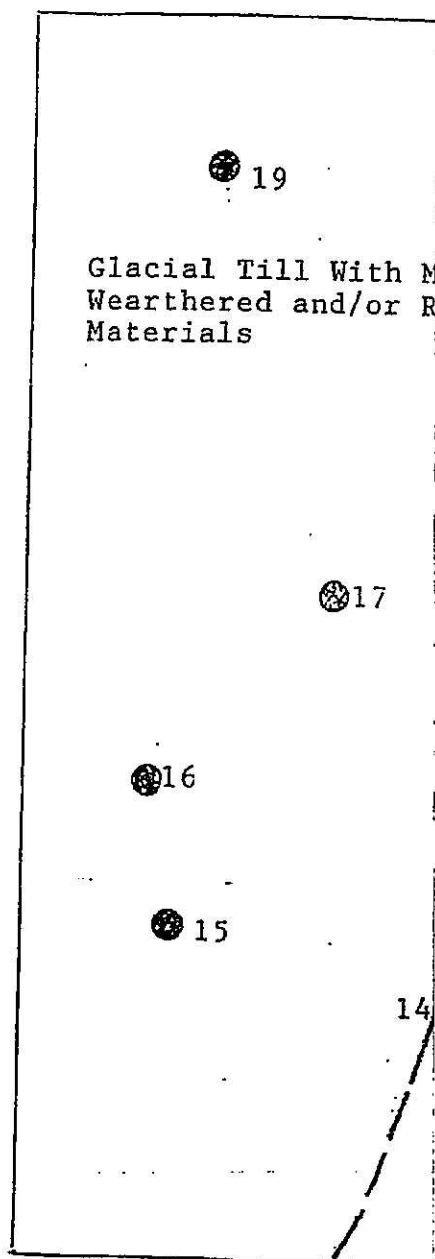
J. Keith Cross, P.E.





SITE SKETCH

FIGURE 1



Approximate Scale 1"=100'

ETCH-GENERALIZED SITE GEOLOGY

FIGURE 2



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### EXPLORATION PIT LOGS

#### EXPLORATION PIT 1

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 7.5         | Dark brown to brown, loose, silty, gravelly SAND mixed with concrete and asphalt rubble to 18 inches, moist to very moist. (Fill) |
| 7.5 - 8.0         | Black to dark brown, loose, silty SAND, very moist. (Discontinuous across pit, possible old topsoil and/or fill.)                 |
| 8.0 - 15.0        | Gray-brown grading to tan, loose to medium dense, gravelly SAND with some silt to silty, very moist to wet.                       |
| 15.0 - 18.0       | Tan to rusty tan, medium dense to dense, silty, gravelly SAND, wet becoming very moist to moist.                                  |
| 7.5 - 11.0        | Gray, dense, SAND, with occasional gravel, very moist to wet.                                                                     |

-No ground water observed.

#### EXPLORATION PIT 2

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.5         | SOD                                                                                                                                                                   |
| 0.5 - 6.0         | Tan to gray-brown, loose to medium dense rapidly becoming dense to very dense with depth, gravelly SAND with trace to some silt, moist to very moist.                 |
| 6.0 - 15.0        | Gray-brown, dense to very dense, gravelly SAND with small cobbles to SAND and GRAVEL with small cobbles, scattered small boulders and trace to some silt, very moist. |

-No ground water observed.

-Terminated at effective refusal, 15.0 feet.

#### EXPLORATION PIT 3

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.8/1.0     | FOREST DUFF and TOPSOIL.                                                                                                                                                        |
| 0.8/1.0- 21.0     | Tan grading to gray-brown, loose to medium dense rapidly becoming dense to very dense with depth, gravelly SAND with cobbles and scattered boulders, trace to some silt, moist. |

-No ground water observed.

-Depth measured from upper end of pit.

FIGURE 3

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#### EXPLORATION PIT 4

##### Depth-Feet

##### Soil

|     |   |      |                                                                                                                 |
|-----|---|------|-----------------------------------------------------------------------------------------------------------------|
| 0.0 | - | 0.5  | FOREST DUFF and TOPSOIL.                                                                                        |
| 0.5 | - | 1.5  | Brown, loose to medium dense, silty, gravelly SAND, moist to very moist.<br>(Possible weathered glacial till?)  |
| 1.5 | - | 3.5  | Gray-brown, medium dense, silty, gravelly SAND, moist to very moist.<br>(Possible weathered glacial till?)      |
| 3.5 | - | 17.0 | Tan to gray-brown, dense to very dense, gravelly SAND with cobbles,<br>trace to some silt, moist to very moist. |

-No ground water observed.  
-Depth measured from lower end of pit.

#### EXPLORATION PIT 5

##### Depth-Feet

##### Soil

|          |   |         |                                                                                                      |
|----------|---|---------|------------------------------------------------------------------------------------------------------|
| 0.0      | - | 0.8/1.0 | SOD, FOREST DUFF, TOPSOIL.                                                                           |
| 0.8/1.0- |   | 3.0     | Brown to gray-brown, loose to medium dense, silty, gravelly SAND, moist.<br>(Weathered glacial till) |
| 3.0      | - | 11.0    | Gray-brown to gray, dense to very dense, silty, gravelly SAND, moist.<br>(Glacial till)              |
| 11.0     | - | 15.0    | Gray with some iron staining, dense to very dense, gravelly SAND with<br>varying silt, moist.        |

-No ground water observed.  
-Depth measured from upper end of pit.

#### EXPLORATION PIT 6

##### Depth-Feet

##### Soil

|     |   |      |                                                                                                                                                                                                       |
|-----|---|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 | - | 1.0  | SOD, FOREST DUFF, TOPSOIL.                                                                                                                                                                            |
| 1.0 | - | 3.5  | Brown grading to gray-brown, loose, silty SAND with gravel, moist.                                                                                                                                    |
| 3.5 | - | 19.0 | Tan to rusty, dense to very dense, gravelly SAND with trace to some silt,<br>scattered cobbles and boulders (including one, very large granitic boulder<br>unmovable with the backhoe), moist to wet. |

-Moderate ground water flow below 12.0 feet.

#### FIGURE 4

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| <u>Depth-Feet</u> |        | <u>EXPLORATION PIT 7</u>                                                                                                                                                  |
|-------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |        | <u>Soil</u>                                                                                                                                                               |
| 0.0               | - 0.3  | SOD                                                                                                                                                                       |
| 0.3               | - 2.5  | Tan to gray-brown, very loose to loose, silty SAND varying gravel, very moist to wet. (Fill)                                                                              |
| 2.5               | - 6.0  | Gray, very loose to loose, silty SAND with concrete rubble, brick, wood, logs and small, scattered pockets of unidentified, white, sugary to gritty material, wet. (Fill) |
| 6.0               | - 7.0  | Black to dark brown, soft, organic SILT, wet.                                                                                                                             |
| 7.0               | - 14.0 | Tan to gray-brown mottled, soft to medium stiff/loose to medium dense, interbedded SILT and fine SAND, wet grading to very moist.                                         |
| 14.0              | - 16.0 | Gray-brown to gray, medium dense to dense, gravelly SAND with trace to some silt, wet.                                                                                    |

-Heavy ground water flow at 7.0 feet.  
-Moderate caving from surface.

| <u>Depth-Feet</u> |        | <u>EXPLORATION PIT 8</u>                                                                                                                  |
|-------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                   |        | <u>Soil</u>                                                                                                                               |
| 0.0               | - 0.2  | SOD                                                                                                                                       |
| 0.2               | - 2.5  | Tan to gray-brown, very loose to loose, silty SAND varying gravel, very moist to wet. (Fill)                                              |
| 2.5               | - 7.0  | Gray, loose, silty SAND with clay pipe, concrete rubble, old rug, chair frame, duff and topsoil-like materials, very moist to wet. (Fill) |
| 7.0               | - 8.0  | Dark brown, soft, organic SILT with roots, wet.                                                                                           |
| 8.0               | - 16.0 | Gray, loose to medium dense, silty SAND grading to gravelly SAND, wet.                                                                    |

-Heavy water flow below 7.0 feet.  
-Moderate odor of decomposing organics.  
-Moderate caving from surface.

FIGURE 5



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#### EXPLORATION PIT 9

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.2         | SOD                                                                                                                                                                                                                                           |
| 0.2 - 6.0         | Gray-brown to brown, loose, silty SAND with varying gravel, and scattered small limbs with duff and topsoil-like materials mixed in lower portion, very moist to wet. (Fill with possible native materials mixed in lower foot to 18 inches.) |
| 6.0 - 11.0        | Gray, loose to medium dense, SAND to SAND and GRAVEL, wet.                                                                                                                                                                                    |
| 11.0 - 13.0       | Gray, medium dense, SAND interbedded with silt, clayey silt and silty sand, wet.                                                                                                                                                              |

- Heavy water flow below 5.5 feet.
- Minor caving below 2.0 feet.
- Slight odor of decomposing organics.

#### EXPLORATION PIT 10

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 2.0         | SOD and black, soft, silty TOPSOIL, very moist to wet.                                                                                        |
| 2.0 - 3.5         | Tan and rust mottled, loose, silty SAND, wet.                                                                                                 |
| 3.5 - 7.5         | Gray-brown to gray, medium dense to dense, gravelly SAND to SAND with some gravel and varying silt, with occasional very large boulders, wet. |

- Heavy water flow below 2.0 feet.
- Excavation terminated on very large boulder, unmovable with backhoe.

#### EXPLORATION PIT 11

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                |
|-------------------|--------------------------------------------------------------------------------------------|
| 0.0 - 1.0         | SOD and black, soft, silty TOPSOIL, very moist to wet.                                     |
| 1.0 - 3.0         | Gray to tan and rust mottled, loose/medium stiff, silty SAND to SILT and SAND, very moist. |
| 3.0 - 11.0        | Gray, medium dense to dense, gravelly, silty SAND, coarser and less silt with depth, wet.  |

- Light to moderate seepage below 3.0 feet.

#### FIGURE 6

EXPLORATION PIT 12

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 1.0         | CONCRETE rubble on surface. (Fill)                                                                                                             |
| 1.0 - 5.0         | Dark brown to gray, loose, silty, gravelly SAND mixed with concrete and asphalt debris, and brick, voids in layer, moist to very moist. (Fill) |
| 5.0 - 6.5         | Dark brown, soft, silty TOPSOIL, very moist.                                                                                                   |
| 6.5 - 9.0         | Tan to gray-brown, loose becoming dense, gravelly SAND with trace to some silt, moist.                                                         |
| 9.0 - 11.0        | Gray, dense, silty, gravelly SAND, moist. (Glacial till)                                                                                       |
| 11.0 - 17.0       | Tan, dense to very dense, gravelly SAND to SAND and GRAVEL, very moist with wet zones.                                                         |

-Light seepage at 9.0 feet.

-Measured from uphill side of pit, approximately five to six feet above adjacent ground.

EXPLORATION PIT 13

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------|
| 0.0 - 1.0         | FOREST DUFF and TOPSOIL                                                                                          |
| 1.0 - 3.0         | Brown, loose silty SAND with varying gravel, moist.                                                              |
| 3.0 - 5.8         | Gray-brown with minor tan mottling, loose to medium dense, silty, gravelly SAND, moist. (Weathered glacial till) |
| 5.8 - 7.0         | Brown to gray-brown, medium dense to dense, silty, gravelly SAND, moist. (Glacial till)                          |
| 7.0 - 12.0        | Gray-brown to rusty brown, dense to very dense, gravelly SAND to SAND and GRAVEL, trace to some silt, moist.     |

-No ground water observed.

EXPLORATION PIT 14

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.5         | SOD and TOPSOIL                                                                                                                                                                     |
| 0.5 - 2.5         | Brown, loose, silty SAND with trace gravel, very moist.                                                                                                                             |
| 2.5 - 5.0         | Tan to gray, medium dense to dense, GRAVEL and SAND, wet.                                                                                                                           |
| 5.0 - 11.0        | Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, very moist to wet. (Glacial till interbedded with glacial drift materials.) |
| 11.0 - 13.0       | Gray, very dense, gravelly SAND with some silt to silty, wet.                                                                                                                       |

-Light to moderate water flow between 2.5 and 5.0 feet.

FIGURE 7

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Depth-Feet

0.0 - 0.4  
0.4 - 2.5  
2.5 - 10.0

EXPLORATION PIT 15

Soil

SOD and TOPSOIL

Brown, loose, silty SAND with trace gravel, very moist.

Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, very moist to wet. (Glacial till interbedded with glacial drift materials.)

-No ground water observed.

Depth-Feet

0.0 - 0.7  
0.7 - 4.0  
4.0 - 12.0

EXPLORATION PIT 16

Soil

SOD and TOPSOIL

Brown, loose, silty SAND with trace gravel, very moist.

Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, very moist to wet. (Glacial till interbedded with glacial drift materials.)

-Light seepage between 4.0 and 5.0 feet.

Depth-Feet

0.0 - 0.8  
0.8 - 3.5  
3.5 - 13.0

EXPLORATION PIT 17

Soil

SOD and TOPSOIL

Brown, loose, silty SAND with trace gravel, very moist.

Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, and scattered sand lenses and layers, very moist to wet. (Glacial till interbedded with glacial drift materials, less till-like in appearance with depth.)

-Light to moderate seepage below 7.0 feet.

FIGURE 8



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#### EXPLORATION PIT 18

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 1.5         | FOREST DUFF over black, soft, silty SAND and organic SILT, wet.                                                                                                                                                           |
| 1.5 - 5.0         | Brown to gray and tan mottled, loose to medium dense, silty, SAND with some gravel to gravelly, wet                                                                                                                       |
| 5.0 - 14.0        | Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, and scattered sand lenses and layers, very moist to wet. (Glacial till interbedded with glacial drift materials.) |

-Light to moderate water flow between 1.5 to 3.0 feet.

#### EXPLORATION PIT 19

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.3         | FOREST DUFF                                                                                                                                                                                                               |
| 0.3 - 3.0         | Brown to tan, loose, silty SAND with some gravel, moist.                                                                                                                                                                  |
| 3.0 - 12.0        | Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, and scattered sand lenses and layers, very moist to wet. (Glacial till interbedded with glacial drift materials.) |

-No ground water observed.

#### EXPLORATION PIT 20

| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 1.5         | FOREST DUFF and TOPSOIL                                                                                                                                                                                                   |
| 1.5 - 5.0         | Brown to tan, loose, silty SAND with some gravel, moist.                                                                                                                                                                  |
| 5.0 - 13.0        | Gray, dense to very dense, silty, gravelly SAND interbedded with gravelly SAND with some silt to silty, and scattered sand lenses and layers, very moist to wet. (Glacial till interbedded with glacial drift materials.) |

-Light seepage between 3.5 and 5.5 feet.

#### EXPLORATION PIT 21

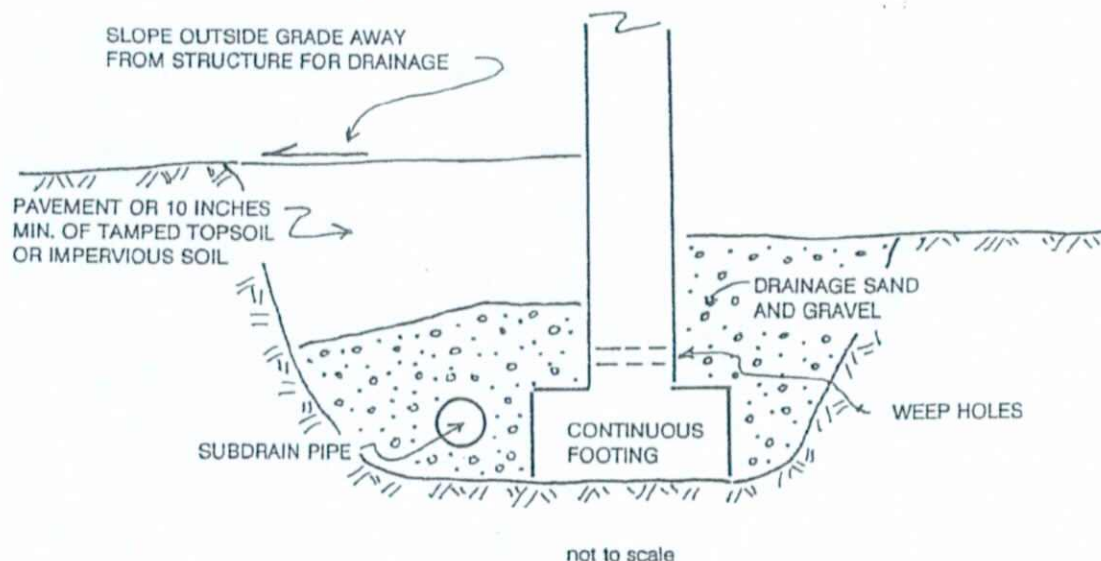
| <u>Depth-Feet</u> | <u>Soil</u>                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 - 0.3         | SOD                                                                                                                                            |
| 0.3 - 13.0        | Brown, loose to medium dense, stratified SAND and GRAVEL and gravelly SAND interbedded with gravel and clean sand to trace silt, moist to wet. |

-Very heavy water flow below 10.0 feet.

-Massive caving from surface.

-Pit excavated into face of six foot high berm. Depth measured from top of berm.

#### FIGURE 9



## MATERIALS

### SUBDRAIN PIPE

4" Minimum Diameter Perforated Or Slotted, Rigid, Smooth Wall, Tight Jointed Pipe Sloped To Drain (4" / 100' min. slope) With Clean-Outs.

Pipe May Be Either Plastic (PVC or ABS), Metal, or Concrete.

ADS FLEXIBLE CORRUGATED PIPE IS SPECIFICALLY NOT RECOMMENDED FOR USE, EXCEPT FOR TEMPORARY INSTALLATIONS.

Slotted Pipe---1/8" max. Slot Width

Perforated Pipe---3/16" to 3/8" Holes

Slots or Perforations In Lower Half Of Pipe With Lower Quarter Segment Solid For Water Flow.

### DRAINAGE SAND & GRAVEL

To Meet Washington State Specifications Or The Following Gradation.

| Sieve Size.      | % Passing By Weight |
|------------------|---------------------|
| 1 1/2"           | 100                 |
| 3/4"             | 70-90               |
| 1/4"             | 30-60               |
| No. 8            | 20-50               |
| No. 30           | 8-30                |
| No. 50           | 3-12                |
| No. 200          | 0-1.2               |
| (by wet sieving) | (non-plastic)       |

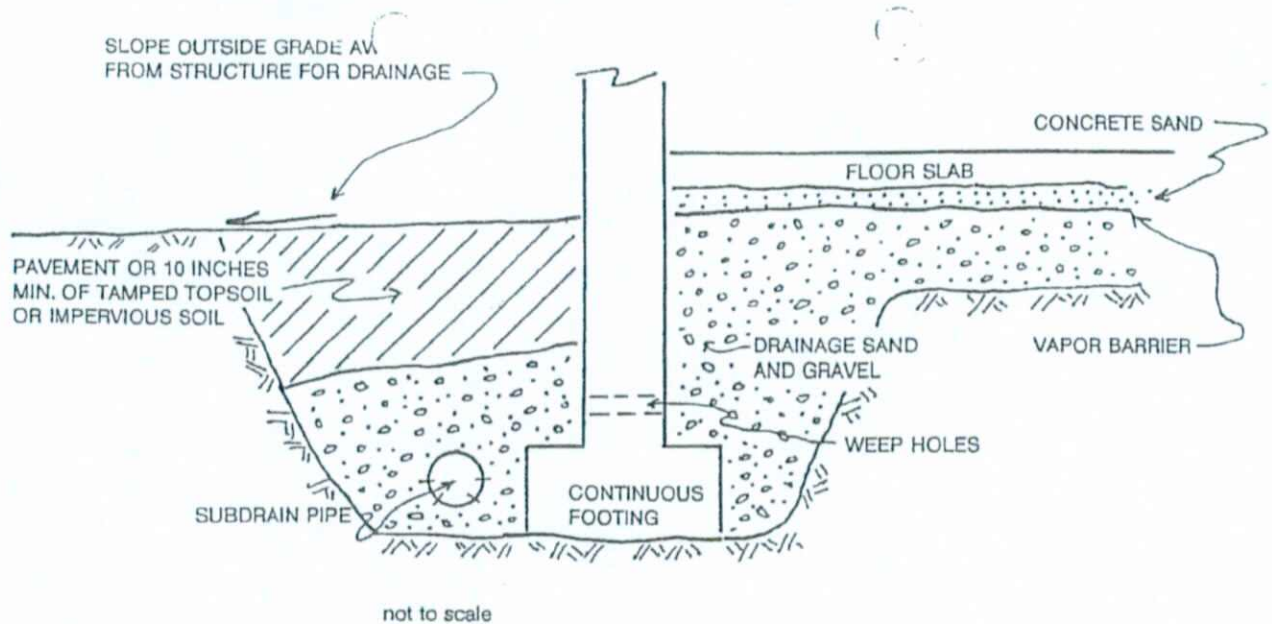
## NOTES

- 1) Drainage Sand & Gravel Inside Stemwalls Should Be Connected Hydraulically To Subdrain Pipe. Use Of 1" to 2" Diameter Weep Holes Is One Applicable Method.
- 2) Subdrain Pipe Should Be Bedded With A Minimum Of 2" Of Drainage Sand & Gravel Beneath The Pipe And 6" Around The Sides And Above The Pipe.
- 3) Backfill Within 18" Of Wall Should Be Compacted With Hand-Operated Equipment. Heavy Equipment Should Not Be Used For Backfill, As Such Operation Could Increase Lateral Earth Pressures And Possibly Damage The Wall.
- 4) All Backfill Should Be Placed In Layers Not Exceeding 6" Loose Thickness And Be Nominally Compacted. Beneath Paved Or Sidewalk Areas, Compact To At Least 95% Modified Proctor Maximum Density (ASTM D1557).

## *SUBDRAIN & BACKFILL SCHEME*

### *SHALLOW FOOTINGS & STEMWALLS*





### MATERIALS

#### SUBDRAIN PIPE

4" Minimum Diameter Perforated Or Slotted, Rigid, Smooth Wall, Tight Jointed Pipe Sloped To Drain (4" / 100' min. slope) With Clean-Outs.

Pipe May Be Either Plastic (PVC or ABS), Metal, or Concrete.

ADS FLEXIBLE CORRUGATED PIPE IS SPECIFICALLY NOT RECOMMENDED FOR USE, EXCEPT FOR TEMPORARY INSTALLATIONS.

Slotted Pipe---1/8" max. Slot Width

Perforated Pipe---3/16" to 3/8" Holes

Slots or Perforations In Lower Half Of Pipe With Lower Quarter Segment Solid For Water Flow.

#### DRAINAGE SAND & GRAVEL

To Meet Washington State Specifications Or The Following Gradation.

| Sieve Size       | % Passing By Weight |
|------------------|---------------------|
| 1 1/2"           | 100                 |
| 3/4"             | 70-90               |
| 1/4"             | 30-60               |
| No. 8            | 20-50               |
| No. 30           | 8-30                |
| No. 50           | 3-12                |
| No. 200          | 0-1.2               |
| (by wet sieving) | (non-plastic)       |

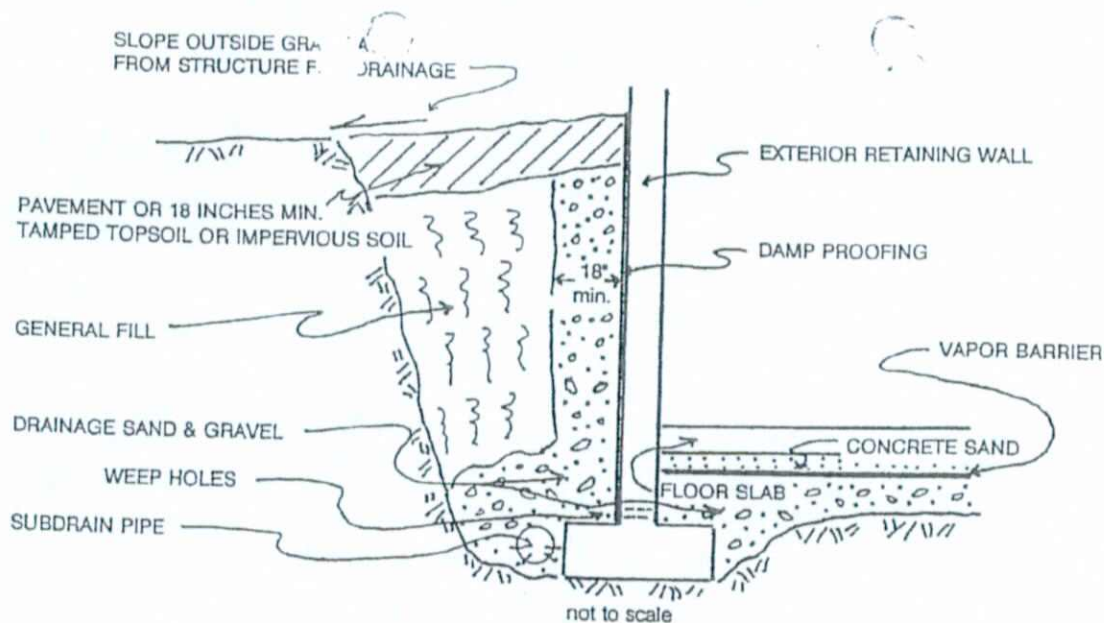
### NOTES

- 1) Drainage Sand & Gravel Beneath Floor Slab Should Be Connected Hydraulically To Subdrain Pipe. Use Of 1" to 2" Diameter Weep Holes Is One Applicable Method.
- 2) Subdrain Pipe Should Be Bedded With A Minimum Of 2" Of Drainage Sand & Gravel Beneath The Pipe And 6" Around The Sides And Above The Pipe.
- 3) Backfill Within 18" Of Wall Should Be Compacted With Hand-Operated Equipment. Heavy Equipment Should Not Be Used For Backfill, As Such Operation Could Increase Lateral Earth Pressures And Possibly Damage The Wall.
- 4) All Backfill Should Be Placed In Layers Not Exceeding 6" Loose Thickness And Be Nominally Compacted. Beneath Paved Or Sidewalk Areas, Compact To At Least 95% Modified Proctor Maximum Density (ASTM D1557).

## *SUBDRAIN & BACKFILL SCHEME*

### *SHALLOW FOOTINGS WITH INTERIOR SLAB ON GRADE*





### MATERIALS

#### SUBDRAIN PIPE

4" Minimum Diameter Perforated Or Slotted, Rigid, Smooth Wall, Tight Jointed Pipe Sloped To Drain (4" / 100' min. slope) With Clean-Outs.

Pipe May Be Either Plastic (PVC or ABS), Metal, or Concrete.

ADS FLEXIBLE CORRUGATED PIPE IS SPECIFICALLY NOT RECOMMENDED FOR USE, EXCEPT FOR TEMPORARY INSTALLATIONS.

Slotted Pipe—1/8" max. Slot Width

Perforated Pipe—3/16" to 3/8" Holes

Slots or Perforations In Lower Half Of Pipe With Lower Quarter Segment Solid For Water Flow.

#### DRAINAGE SAND & GRAVEL

To Meet Washington State Specifications Or The Following Gradation.

| Sieve Size       | % Passing By Weight |
|------------------|---------------------|
| 1 1/2"           | 100                 |
| 3/4"             | 70-90               |
| 1/4"             | 30-60               |
| No. 8            | 20-50               |
| No. 30           | 8-30                |
| No. 50           | 3-12                |
| No. 200          | 0-1.2               |
| (by wet sieving) | (non-plastic)       |

### NOTES

- 1) Drainage Sand & Gravel Beneath Floor Slab Should Be Connected Hydraulically To Subdrain Pipe. Use Of 1" to 2" Diameter Weep Holes Is One Applicable Method.
- 2) Subdrain Pipe Should Be Bedded With A Minimum Of 2" Of Drainage Sand & Gravel Beneath The Pipe And 6" Around The Sides And Above The Pipe.
- 3) Backfill Within 18" Of Wall Should Be Compacted With Hand-Operated Equipment. Heavy Equipment Should Not Be Used For Backfill, As Such Operation Could Increase Lateral Earth Pressures And Possibly Damage The Wall.
- 4) All Backfill Should Be Placed In Layers Not Exceeding 6" Loose Thickness And Be Nominally Compacted. Beneath Paved Or Sidewalk Areas, Compact To At Least 95% Modified Proctor Maximum Density (ASTM D1557).

## ***SUBDRAIN & BACKFILL SCHEME***

### ***BASEMENT WALLS WITH INTERIOR SLAB-ON-GRADE***

J. KEITH CROSS, P.E.

9210 NE 134<sup>th</sup> Street, Kirkland, Washington 98034-1876

Development Services First Draft  
DRAFT RESOLUTION NO 08-004.

A RESOLUTION OF THE CITY OF DES MOINES, WASHINGTON approving the preliminary Planned Unit Development (hereinafter "PUD") subdivision entitled Pacific Heights, (hereinafter, the "subdivision") subject to conditions specified herein.

WHEREAS, Pacific West LLC. (hereinafter, the applicant) filed an application for a preliminary PUD subdivision, and

WHEREAS, the subdivision is located within the cities of Des Moines and Federal Way and Unincorporated King County

WHEREAS, the subdivision is located on property within the RS-7200: Residential Single Family 7,200 zone and RM-1800: 1 unit per 1,800 square feet, and

WHEREAS, the *Settlement Agreement, Waiver and Release By and Between Granville Southern Corporation, Donald & Marie Tavis, and the Cities of Des Moines and Federal Way* (hereinafter "the Agreement") governs the review and approval of the subdivision, and

WHEREAS, PUDs are authorized in all single family residential zones, and

WHEREAS, an environmental checklist for the subdivision was submitted to the City of Des Moines and was reviewed by the SEPA responsible official for the City of Des Moines, and

WHEREAS, the State Environmental Protection Act (SEPA) official issued a Mitigated Determination of Non-Significance for the subdivision on December 4, 2007, and

WHEREAS, the environmental documents have been available for review with the subdivision application during the review process, and

WHEREAS, the Des Moines Planning Agency reviewed the subdivision at its regular meeting on February 4, 2008, and

WHEREAS, the Des Moines Planning Agency, after review of the PUD subdivision at a public meeting and consideration of the information provided by administration, recommended approval of



the application subject to conditions contained in the Agreement,  
and

**WHEREAS**, the City Council, in a public hearing on February 28, 2008 considered the PUD subdivision, the environmental documents, recommendations from the Planning Agency, and information provided by administration, now therefore;

**THE CITY COUNCIL OF THE CITY OF DES MOINES RESOLVES AS FOLLOWS:**

**Sec. 1. Findings of Fact.** The Findings of Fact set forth in Exhibit 1, attached hereto and incorporated by this reference, are adopted in full by the City Council in support of its decision to approve the subdivision subject to the conditions established by the Agreement.

**Sec. 2. Decision criteria.** The criteria used in making the decision is limited to ensuring the project is consistent with the terms of the Agreement included as Exhibit 2. The City Council also finds that the subdivision is in compliance with the required criteria, and is consistent with DMMC 17.16.130 and 18.52.010 as set forth in the Findings of Fact in Exhibit 1, adopted above.

**Sec 3. Approved modifications to the Illustrative Site Plan identified as Exhibit B to the Agreement.** Consistent with the provisions established by the Agreement the following modifications to the Illustrative Site Plan are approved:

(1) 14<sup>th</sup> Place South shall be widened from 30 feet to 50 feet to allow the installation of curb, gutter and sidewalk on both sides of the street.

(2) Tract C shall be relocated to the intersection of 15<sup>th</sup> Avenue South and South 282<sup>nd</sup> Street to provide a safer access point to the private street.

(3) The Right-of-Way Width for 15<sup>th</sup> Avenue South shall be allowed to be reduced from 56 feet to 50 feet since the additional ROW is not required for the necessary improvements.

(4) The lots north and south of Road A shall be allowed to be configured on the revised site plan due to the relocation of the access road.

(5) Lots 60 - 63 and the detention tract shall be allowed to be switch locations.



(6) The widths of the lots that front on 15<sup>th</sup> Avenue South along the western perimeter of the proposed development shown on the revised site plan shall be allowed to be approximately 10 feet narrower than the lot widths shown for the same area on the illustrative site plan contained as Exhibit B of the Agreement.

(7) The width of the street frontage for lots 46 - 51 on the revised site plan shall be allowed to be approximately 2 - 5 feet narrower than the width of the street frontage shown on the illustrative site plan contained as Exhibit B of the Agreement.

**Sec.4. Approved deviations.** Consistent with the provisions of DMMC 17.36.010, DMMC 18.52.100, and DMMC 18.86.090 the following deviations are approved:

**Subdivision Layout and Design Deviations (chapter 17.36 DMMC)**

(1) Minimum lot width and depth ratio shall not be met for lots 6, 32, 63, 66 and 77.

(2) All lots shall meet the 20' minimum frontage requirement except for lots 7 - 8 and 47 - 53.

(3) Corner lots shall not 5 feet wider than the 60 foot minimum width established by zoning.

(4) Road B shall be allowed to be over 150 feet in length as measured from the centerline of Road A and will not have a cul-de-sac turnaround.

(5) The right-of-way width for 15<sup>th</sup> Avenue shall be allowed to be reduced to 50 feet from 60 feet.

(6) Road A shall be allowed to be a cul-de-sac road over 450 feet in length.

**Zoning Code Deviations (Chapter 18.08 DMMC)**

(1) Minimum lot area will be less than 7,200 square feet on all lots. The average lot size within the PUD is 3,779 square feet.

(2) Minimum lot width of 60 feet shall be allowed to be reduced to a minimum of 30 feet for all lots.

(3) The minimum front yard setback shall be allowed to be reduced from 20 feet to 15 feet for all lots.

(4) The side yard setbacks for all lots will shall be allowed to be five feet on one side and zero on the another side;

except for lot 65 which shall be allowed to have zero on both sides and lots 27 - 37 and 77 which shall be allowed to have five feet on both sides.

(5) The minimum rear yard setback shall be allowed to be reduced from twenty (20) feet to ten (10) feet on all lots except 7 - 10, 13 - 30, 48 - 51, 56 - 59, and 67.

PUD Buffer Deviations (Chapter 18.52 DMMC)

(1) The required twenty foot perimeter buffer/yard area will not be reduced except for lots 8, 52 - 55, and 63 - 66.

**Sec. 5. Approval subject to conditions.** The subdivision is approved subject to the conditions established by the Agreement.

**Sec. 6. Approved Preliminary PUD Subdivision Plat Map.** The Preliminary Modified Subdivision in Exhibit 3, attached hereto and incorporated by this reference, is adopted in full by the City Council.

**Sec. 7. Compliance with other law.** Nothing in this resolution shall be construed as excusing the applicant from compliance with all federal, state, or local statutes, ordinances, or regulations applicable to this subdivision other than as expressly set forth herein.

**Sec. 8. Resolution attached to approval documents.** A certified copy of this Resolution, along with the herein referenced Findings of Fact and preliminary plat, shall be attached to and become a part of the evidence of the approval of said preliminary PUD subdivision to be delivered to the applicant.

**Sec. 9. Distribution of Resolution following Council action.** Certified or conformed copies of this Resolution shall be delivered to the following:

(1) City of Des Moines Planning, Building and Public Works Department;

(2) South King Fire and Rescue; and

(3) The City of Des Moines City Clerk.

**Sec 10. Distribution of resolution by planning official.** Within five days following adoption of this Resolution, the planning official shall distribute the Resolution to the

applicant, and to each person who submitted timely written or oral testimony to the City Council for inclusion in the record.

**ADOPTED BY** the City Council of the City of Des Moines, Washington this \_\_\_\_ day of \_\_\_\_\_, 2008 and signed in authentication thereof this \_\_\_\_ day of \_\_\_\_\_, 2008.

            
M A Y O R

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney

ATTEST:

\_\_\_\_\_  
City Clerk



## FINDINGS OF FACT

### DRAFT RESOLUTION NO.08-004

February 28, 2008

The Des Moines City Council, upon review of an application requesting approval of a preliminary Planned Unit Development (PUD) subdivision allowing for the subdivision of 77 single residential lots and in consideration of information communicated during a public hearing hereby finds:

#### (A) Settlement Agreement

1. On August 13, 1998, the Boundary Review Board (hereinafter "BRB") issued a decision approving the annexation of property known as the Redondo Riviera Annexation Area into the City of Des Moines.
2. The area of the Redondo Riviera included property owned by Granville Southern and Donald and Marie Tavis.
3. At the time of the BRB decision, Granville Southern had a vested application for a project known as Pacific Place (King County Permit Application 807C0270) filed and under review with King County, which consisted of 120 Unit Condominium.
4. After the annexation was approved, Granville Southern filed an appeal of the BRB's annexation decision with the King County Superior Court.
5. In order to settle the litigation, the Cities of Des Moines and Federal Way, along with Granville Southern and Donald and Marie Tavis entered into the *Settlement Agreement, Waiver and Release By and Between Granville Southern Corporation, Donald & Marie Tavis, and the Cities of Des Moines and Federal Way* (hereinafter "the Agreement") in 2000.
6. The Agreement established guidelines for future review of the proposed Pacific Place development. As part of the Agreement the City agreed to limit the future review of the project to determining if it was consistent with the terms of the Agreement.
7. No real and sustained progress was made on the application until late 2005 when Granville Southern sold the project.

8. In the early part of 2006, the City of Des Moines was contacted by the new owners of the property and project, Pacific West LLC, to discuss the steps needed to complete the Pacific Place project.

9. The new owners renamed the project Pacific Heights.

(B) Subdivision

1. Except where otherwise stated herein, the proposed plat is consistent with the applicable provisions of the comprehensive plan, zoning code, and other City policies and regulations.
  - a. The developer has submitted the requisite permit applications for a preliminary plat utilizing the provisions of a subdivision codified in Chapter 17.16 of the Des Moines Municipal Code.
  - b. PUD's are authorized in all single family residentially zoned areas.
  - c. The application specifically requests to divide 12.98 acres of underdeveloped land into 77 lots for residential use.
  - d. The zoning for the property is RS-7200: Residential Single Family 7,200 and RM-1800: 1 unit per 1,800 square feet.
  - e. The Preferred Land Use Map for the Des Moines Comprehensive Plan indicates the subject property as preferred for single family developments.
  - f. The Preferred Land Use Map for the City of Federal Way indicated that the subject property as preferred for high density single family and multifamily.
  - g. The subdivision contains tracts for wetlands and required buffers; therefore, the number of lots within the subdivision shall be determined under the provisions for limited density transfer for environmentally sensitive areas codified in DMMC 18.86.090.

- h. The limited density transfer calculation of potential dwelling units in residential development proposals is determined by the ratio of developable area to undevelopable critical area of the development site.
- i. The limited density formula is designed to provide compensation for the preservation of critical areas, flexibility in design, and consistent treatment of different types of development proposals.
- j. The maximum number of lots within the subdivision under with the limited density transfer calculations is demonstrated below:

$$[(\text{Developable Area}) \text{ divided by } (\text{Minimum Lot Area/DU})] + [(\text{Undevelopable Area}) \text{ divided by } (\text{Minimum Lot Area/DU}) (\text{Development Factor})] = \text{Maximum Number of Dwelling Units.}$$

$$[(124,746 / 1,800) + (297,765 / 7,200)] + [(140,719 / 7,200) * 0.24] = \text{Maximum Dwelling Units.}$$

$$[69.30 + 41.36] + [19.54 * 0.24] = \text{Maximum Dwelling Units}$$

$$110.66 + 4.69 = \text{Maximum Dwelling Units}$$

$$115.35 = \text{Maximum Dwelling Units}$$

$$115 = \text{Maximum Dwelling Units}$$

- k. The reduction in the minimum lot size is consistent with the intent of the zoning code.
- l. Development Services issued a written notice of complete application on December 4, 2006 providing official notice that the application met the procedural submittal requirements established by the City.
- m. Development Services issued a notice of preliminary PUD subdivision application on August 6, 2007 and October 8, 2007.



- n. A Mitigated Determination of Nonsignificance (MDNS) was issued in accordance with WAC 197-11-350 and DMMC 16.04.110 on December 4, 2007.
  - o. A public comment period for the MDNS was provided from December 4, 2007 to December 31, 2007 for the State Environmental Protection Agency (SEPA) determination.
  - p. The Des Moines Planning Agency met on February 28, 2008 to review the PUD subdivision. The Planning Agency recommended that the Council approve the preliminary PUD subdivision. The Planning Agency voted 7-0 in support of this recommendation.
  - q. Development Services provided a notice of public hearing on February 11, 2008 and provided an additional public comment period from February 11, 2008 to February 28, 2008.
  - r. At the February 28, 2008 public hearing, an opportunity to receive public comment was afforded to that applicant and interested citizens regarding the proposed modified subdivision.
2. There are adequate provisions for drainage ways, rights-of-way, sidewalks, easements, water supplies, sanitary waste, fire protection, power service, parks, playgrounds and schools. These provisions include:
- a. The City has reviewed Traffic Analysis prepared by Transportation David Hamlin & Associates, dated May 1998.
  - b. The City has reviewed Traffic Analysis prepared by Mirai Associates, LLC. dated November 2007.
  - c. The subdivision is served by the development of 2 new public rights-of-way and one private access tract.
  - d. The road layout provides connections to 15<sup>th</sup> Avenue South and South 279<sup>th</sup> Street.

- e. Deviations to the street standards are authorized by DMMC 18.52.100 and DMMC 17.36.010.
  - f. The City has reviewed a Technical Information Report prepared by the Peterson Consulting Engineers dated November 2006 and revised March 2007 and June 2007.
  - g. The proposed surface water detention vault is consistent with the 1998 King County Surface Water Design Manual.
  - h. All electrical and communication systems shall be installed underground by the applicant. Existing above-ground electrical and communication systems located in all rights-of-way adjoining the proposed subdivision and extending from the subdivision to the nearest utility pole also shall be undergrounded.
  - i. New fire hydrants within the subdivision will be installed by the applicant. Installation of the new fire hydrant will be done concurrently with the installation of the required right-of-way improvements.
  - j. All sewer, water, or surface water utilities will be within the ROW or contained within the appropriate easement.
  - k. The applicant is required to make a payment in lieu of park dedication. The total in-lieu fee for the proposed subdivision would be based on the Agreement and paid at the time that applicant applies for approval of the final plat.
  - l. As part of the project the applicant will be required to pay school impact fees to the Federal Way School District in the amount of \$96,180.
3. The proposed plat design will serve the public use and interest and is consistent with the public health, safety, and welfare.
- a. The proposed preliminary subdivision provides for coordinated development with adjoining properties or future development of adjoining properties

including by providing additional connections to the east.

- b. Copies of the site plan were reviewed by the City of Federal Way during the review of the preliminary PUD since part of the project is within the jurisdictional boundaries of the City of Federal Way.

(C) Planned Unit Development (PUD)

1. DMMC § 18.52.100 allows for the reduction in lot width and lot size requirements for PUD subdivisions as long as the density within the PUD subdivision does not exceed density for the net development for the underlying zone.
2. DMMC § 18.52.100(5) defines net development as the area remaining after subtracting the area set aside for churches, schools, or commercial use from the total development area.

Net Development Area divided by Minimum Lot  
Area/DU = Maximum Number of Dwelling Units

$(124,746 / 1,800) + (438,484 / 7,200) = \text{Maximum}$   
Number of Dwelling Units

$(69.30) + (60.90) = \text{Maximum Number of Dwelling}$   
Units

130.20 = Maximum Number of Dwelling Units

130 = Maximum Number of Dwelling Units

3. In the RS-7200 zone, there are approximately 6.05 dwelling units per acre and in the RM-1800 zone, there are approximately 24.2 dwelling units per acre. After excluding the proposed and existing rights-of-way and all access tracts, there are approximately 6.80 dwelling units per acre within RS-7200 portion and 9.52 dwelling units per acre within the RM-1800 portion.
4. Within the PUD, 3.69 acres or 28% of the site have been preserved as open space and 6.68 acres or 53% of



the site is utilized for home construction. The remaining 2.56 acres or 19% is utilized as public right-of-way or private access tracts.

(D) WETLAND "A"

1. The City has reviewed a wetland delineation report prepared by Wetland Resources, Inc. dated July 29, 1997.
2. Wetland A is a 60,000 square feet wetland and is considered a palustrine, unconsolidated bottom, mud, permanently flooded, excavated. Vegetation within the wetlands is dominated by willows, salmonberry, yellow iris, lady fern, and speedwell.
3. Wetland A is considered "Significant" wetland since the wetland is greater than one acre in size and has two vegetation classes.
4. Pursuant to DMMC § 18.86.070, "Significant" wetlands require a 100 foot buffer measured from the wetland edge.
5. The wetland buffer will be reduced to 70 feet.
6. The applicant will construct a trail within the wetland buffer consistent with DMMC § 18.86.100
7. The wetland and corresponding buffer will be placed within a separate tract and deeded to the City at the time of final plat.

(E) WETLAND "B"

1. The City has reviewed a wetland delineation report prepared by Wetland Resources, Inc. dated July 29, 1997.
2. Wetland B is a 5,550 square feet palustrine, scrub-shrub, broad-leaved deciduous, saturated wetland. Vegetation within Wetland B is represented by salmonberry, sedges, and skunk cabbage.
3. Wetland B is considered an "Important" wetland due to its size (less than 1 acre), presence of two vegetative

classes, and the fact that it is not located in a stream corridor.

4. Pursuant to DMMC § 18.86.070 "Important" wetlands require a 35 foot buffer measured from the wetland edge.
5. Past development activity has altered the hydrology of the wetland. Additionally, the majority of the buffer on the north side of the wetland will be removed as a result of the new road alignment discussed above.
6. Wetland B will be filled and mitigated at a minimum ratio of 1:1 on site through the creation of wetland adjacent to Wetland A.



DEC 7 0 00 00

SETTLEMENT AGREEMENT, WAIVER AND RELEASE

By And Between Granville Southern Corporation, Donald & Marie Tavis, And The Cities Of Des Moines And Federal Way

WHEREAS, the City of Des Moines ("Des Moines") is a municipal corporation organized under the laws of the State of Washington and has authority to enact laws and enter into agreements to promote the health, safety, and welfare of its citizens, and thereby control the use and development of property within its jurisdiction;

WHEREAS, the City of Federal Way ("Federal Way") is a municipal corporation organized under the laws of the State of Washington and has authority to enact laws and enter into agreements to promote the health, safety, and welfare of its citizens, and thereby control the use and development of property within its jurisdiction;

WHEREAS, Granville Southern Corporation ("Granville Southern") and the marital Community of Donald and Marie Tavis ("Tavis")(Granville Southern and Tavis shall hereafter collectively be referred to as "Granville") (Note: The term "Granville" expressly includes "Coastal Pacific Development, Inc.," the name of the applicant reflected in some King County files associated with the above-referenced application) have filed an application with King County under King County Permit Application 807C0270 for approval of a development project on real property ("Granville Property") known as Pacific Place. King County's code, regulations, and land use controls, therefore, apply to said project. Tavis owns the Granville Property which is legally described in Exhibit A attached hereto. Granville Southern is under contract to purchase the Granville Property from Donald and Marie Tavis;

WHEREAS, King County's code, regulations, and land use controls applicable to the Granville Property development project known as Pacific Place filed with King County under King County Permit Application 807C0270 would allow for more lots/units, less open space, and other development than would be currently allowed under Des Moines' code, regulations, and land use controls;

WHEREAS, on or August 13, 1998, the BRB issued a decision approving the annexation of property known as the Redondo Riviera Annexation Area, File No. 2016, which included a portion of the subject real property into the City of Des Moines;

WHEREAS, Granville filed an appeal of the BRB's annexation decision with the King County Superior Court under Cause No. 98-2-19694-7KNT. Subsequently, the court conducted a hearing and rendered a written decision and judgment;

WHEREAS, an appeal and cross-appeal were filed from said King County Superior Court's decision in the Washington State Court of Appeals, Division I, under Cause No. 44528-6-1;

WHEREAS, the parties wish to settle the litigation, development issues, and the underlying dispute, including, but not limited to, compromise of the applicable code, regulations, and land use

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[Signature]

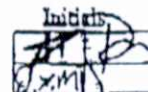


controls applicable to the Granville Property development project known as Pacific Place filed with King County under King County Permit Application 807C0270, in a mutually satisfactory manner,

WHEREAS, this Settlement Agreement, Waiver and Release (hereafter "Agreement") is entered into by and between Granville, Des Moines and Federal Way (collectively referenced as "Parties") to resolve legal matters arising out of lawsuits known as Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al. King County Superior Court Cause No. 98-2-19694-7 KNT, and Granville Southern Corp. et al. v. The City of Federal Way, et al. Court of Appeals Case No. 44528-6-1, and to foreclose further claims, damages, requests for injunctive relief or disputes among the parties related to said matters.

NOW THEREFORE, in consideration of the mutual promises set forth herein, the parties agree as follows:

1. Granville, on its own behalf, its heirs, agents, business partners, investors, optionees/optionors, executors, administrators and assigns, does hereby release: each and every one of the Parties, their successors and assigns, officers, officials, employees, agents and attorneys, both individually and in their representative capacities, from any and all claims, appeals or disputes between Granville and the Parties, either jointly or severally, that have been or could have been raised in Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al. King County Superior Court Cause No. 98-2-19694-7 KNT, or any appeals related thereto, from any claims for damages arising out of or related to the City of Des Moines' Redondo Riviera annexation, and from the actions of any party in litigating the above-referenced cases or in entering into this Agreement. Provided, however, it is expressly understood and agreed that this paragraph shall in no way bar any party from filing a claim, demand, or lawsuit for specific performance of the terms and conditions of this Agreement or for damages arising out of breach of the terms and conditions of this Agreement.
2. Granville warrants and affirms that it has not sold, transferred, or otherwise assigned all or any of its interests in any of its appeals, claims, requests for relief or causes of action released herein and that it is solely empowered to waive and release said matters. In support of this representation and in support of this Agreement, Granville agrees to indemnify and hold harmless any and all of the Parties and any persons or entities covered by this Agreement and any affiliated person, company or entity for any damages, costs, attorneys' fees or other expenses in defending any action brought by Granville, or anyone claiming to hold an interest from Granville based on the appeals, claims or causes of action encompassed by this Agreement.
3. As consideration for this Agreement, and upon the approval and execution of this Agreement by the Parties, Granville agrees to dismiss with prejudice its cross-appeal now pending before the Washington Court of Appeals entitled Granville Southern Corp. et al. v. The City of Federal Way, et al. Court of Appeals for the State of Washington, No. 44528-6-1, execute a stipulation providing for vacation of the Final Judgment previously entered by the Honorable Dean Lum in Granville Southern Corporation, et al. v. The Washington Boundary Review Board for King County, et al. King County Superior Court Cause No. 98-2-19694-7 KNT, and dismiss with

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prejudice its appeal in Cause No. 98-2-19694-7 KNT. Granville, however, shall not be required to withdraw any applications for land use development on the Granville Property that are now pending and vested with King County, including, but, not limited to, the application filed under King County Permit Application 807C0270. Granville, however, agrees that upon annexation of a portion of the Granville Property to Des Moines, as set forth herein, that King County Permit Application 807C0270 shall be transferred to Des Moines for processing subject to the terms and conditions of this Agreement. It is expressly understood that subsequent building and other permits sought for units to be constructed on the subject property following annexation of a portion of the Granville Property into the City of Des Moines shall be processed under the land use and building codes of the City of Des Moines, subject to the terms and conditions of this Agreement

4. As consideration for the mutual promises set forth herein, the Parties collectively agree as follows:

- A. The Parties shall jointly seek relief, modification, satisfaction, or vacation of that judgment filed in King County Superior Court under Cause No. 98-2-19694-7KNT, on the basis that all issues, claims, and defenses relative to said Judgment have been compromised as reflected in this Agreement. Des Moines shall further proceed to modify, finalize, and obtain all appropriate approvals for the Redondo Riviera Annexation Area, File No. 2016 so that the portion of the Granville Property lying westerly of the eastern boundary of 15<sup>th</sup> Ave. South as depicted in the "Illustrative Site Plan" attached hereto as Exhibit B shall be annexed into Des Moines. The Parties shall fully support the annexation of the said portion of the Granville Property into Des Moines.
- B. Within 15 days of the date of this Agreement, Des Moines and Federal Way will commence the public process for amending their Interlocal Agreement, dated December 16, 1996, relating to their respective Potential Annexation Area Designation. Following completion of the public process, the Des Moines and Federal Way City Councils will consider a proposed amended PAA Interlocal Agreement which sets the PAA boundary between Des Moines and Federal Way at the eastern edge of the right-of-way of 15<sup>th</sup> Avenue South, as depicted on the Illustrative Site Plan attached hereto as Exhibit B.
- C. Prior to the annexation of any portion of the Granville Property to Des Moines or Federal Way, Des Moines and Federal Way shall adopt pre-annexation zoning and other land use controls and regulations in conformance with the "Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C. In case of conflicts between the Illustrative Site Plan and Building Development Agreement and Des Moines', King County's, or Federal Way's zoning, codes, regulations, and land use controls, the

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"Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C shall control.

- D. Upon annexation of said portion of the Granville Property to Des Moines, King County shall transfer to Des Moines the processing of Granville's application for the multi-family development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. Said King County Permit Application 807C0270 shall be deemed modified at the request of King County, Des Moines, and Federal Way to conform with the "Illustrative Site Plan" attached hereto as Exhibit B, and the Zoning and Building Development Agreement attached hereto as Exhibit C. Provided, that said King County Permit Application 807C0270 shall not be withdrawn from King County, shall not be deemed to have been modified at the request of the applicant, and said transfer shall have no impact on the vested status of said King County Permit Application 807C0270.
- E. Upon said transfer, said King County Permit Application 807C0270 shall be processed by Des Moines in conformance with the terms and conditions of this Agreement. It is expressly understood that subsequent building and other permits sought for units to be constructed on the subject property following annexation of a portion of the Granville Property into the City of Des Moines shall be processed under the land use and building codes of the City of Des Moines, subject to the terms and condition herein. By this Agreement, Federal Way consents to the transfer of said application to the City of Des Moines, and the processing of said application and/or subsequent permit applications on the Granville Property by Des Moines, subject to the terms and conditions herein.
- F. Upon annexation of said portion of the Granville Property to Des Moines, Des Moines shall process Granville's application for the development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. Granville shall not be required to submit, file, or produce any additional documentation, reports, or information other than previously provided to the Parties as part of said King County Permit Application 807C0270. It is expressly understood that this limit on additional documentation shall not be construed to apply to any permit application filed after annexation of any portion of the Granville Property into the City of Des Moines, except for any such permit application that is required for approval as a Planned Unit Development or Subdivision of the development project on the entire Granville Property known as Pacific Place Condominiums, King County Permit Application 807C0270. The Parties agree that the documentation provided to the Parties as part of said King County Permit Application 807C0270 is as follows:

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- Environmental Site Assessment by Earth Consultants, Inc. dated September 23, 1997
- Road Variance by DBM Consulting Engineers dated February 19, 1998
- Subdivision Guarantee by First American Title Insurance Company Order No. 345322-5
- Wildlife Study by Wetland Resources, Inc. dated March 25, 1998
- Level One Drainage Report by Eastside Consultants, Inc. dated August 25, 1997
- Geotechnical Report by J. Keith Cross, P.E., dated May 31, 1997
- Traffic Report by David Hamlin & Associates and subsequent addendums
- Level Two Downstream Analysis by DBM Consulting Engineers dated June 8, 1998
- Technical Information Report By DBM Consulting Engineers dated October 24, 1997
- Wetland Report by Wetland Resources, Inc. dated July 29, 1997.

Des Moines' review, processing, and approval of said application shall be limited to a determination that said project complies with the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Moreover, Des Moines shall not review, rescind, or otherwise modify approvals previously granted by King County under said King County Permit Application 807C0270. Except as otherwise stated herein, Des Moines shall further approve said project subject only and exclusively, without modification, amendment, or addition, to the terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Des Moines and Federal Way shall not object to, challenge, or otherwise oppose development of the Granville Property in accordance with the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Provided, that Des Moines shall provide Federal Way a minimum of fourteen (14) days within which to review and comment on Des Moines' approval of Granville's Pacific Place project.

- G. The terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein can be amended, modified, or changed upon the express written approval of Granville (its successors or assigns), Des Moines, and Federal Way.

Initials:  


H. All process, review, and approval of subsequent applications filed relative to the entire Granville Property, including but not limited to, grading, drainage, construction related, and building permits, shall be by Des Moines and subject to the code, regulations, and requirements of Des Moines, except as otherwise set forth in the terms and conditions of the "Illustrative Site Plan" attached hereto as Exhibit B, the Zoning and Building Development Agreement attached hereto as Exhibit C, and other conditions stated herein. Provided, however, that Federal Way shall be given a two week period following submittal to review and comment on said applications.

L. The City of Federal Way will dismiss its appeal now pending before the Washington Court of Appeals entitled Granville Southern Corp. et. al. v. The City of Federal Way, et. al. Court of Appeals for the State of Washington, No. 44528-6-1

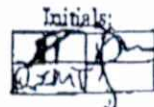
J. Each and every of the named Parties agree to prepare, revise, support and/or execute pleadings, notices, and contemporaneous agreements, as well as conduct and/or participate in any public hearings, deemed necessary to effectuate the intent and purposes of this Agreement.

K. Each and every one of the named Parties agree to support, uphold and defend this Agreement in the event of an appeal, challenge, or lawsuit seeking to set aside, modify, or render void or invalid this Agreement. In the event, that this Agreement is set aside, modified, voided, or invalidated by a court of law, Granville shall be free, in its discretion, to proceed with its application for approval under King County Permit Application 807C0270, as initially filed.

5. Although King County is not a signing party to this Agreement, the County is encouraged to support and take actions consistent herewith.

6. The Parties understand and agree that the consideration the Parties herein agree to undertake, in the form of compliance with the above-referenced conditions, constitutes the Parties' total offer to resolve and settle any and all appeals, claims, damages or disputes among the parties hereto and that it is full, complete and adequate consideration and compensation for each other's acceptance of the terms stated herein and that no Party will receive any other or further consideration under the terms of this Agreement other than that expressly set forth herein.

7. In the event of that failure or inability of the Parties to comply with the terms and conditions of this Agreement, Granville shall be free, in its discretion, to proceed with its application for approval under King County Permit Application 807C0270, as initially filed. In such an event, the City of Federal Way and the City of Des Moines are likewise free to comment upon, object to, oppose, challenge and/or appeal development of the Granville Property under King County Permit Application 807C0270, as initially filed or as subsequently modified.

Initials:  




8. This Agreement may be executed in identical counterparts. For purposes of recording, filing, or providing copies of this Agreement, the counterpart signature pages (and any other pages that are specially marked by the signatories) may be inserted into one of the counterparts to create a single original or copy of the entire agreement.
10. This Agreement shall be interpreted under the laws of the State of Washington.
11. The Parties hereby authorize their attorneys to (1) execute the appropriate notices to effect dismissal(s) with prejudice of any and all appeals or claims the Parties have initiated against any other Party(ies) or any persons covered by this Agreement; and (2) take all necessary and proper steps to ensure that such notices are filed on execution of this Agreement.
12. This Agreement shall be binding upon the heirs, successors and assigns of the parties. Each of the signatories represents and warrants that he or she has the authority to sign for his or her represented entity.
13. **Attorneys' Fees.** Should it be necessary for any party to this Agreement to initiate legal proceedings to adjudicate any issues arising hereunder, the party or parties to such legal proceedings who substantially prevail shall be entitled to reimbursement of their attorneys' fees, costs, expenses and disbursements (including the fees and expenses of expert and fact witnesses) reasonably incurred or made by the substantially prevailing parties in preparing to bring suit, during suit, on appeal, on petition for review, and in enforcing any judgment or award, from the party or parties who do not substantially prevail.
14. **Entire Agreement.** This Agreement is the final and complete expression of the agreement of the parties on all these subjects. This Agreement may not be modified, interpreted, amended, waived or revoked orally, but only by a writing signed by all parties. This Agreement supersedes and replaces all prior agreements, discussions and representations on all these subjects, all of which are merged into, and superseded by, this Agreement. No party is entering into this Agreement in reliance on any oral or written promises, inducements, representations, understandings, interpretations or agreements other than those contained in this Agreement and the Exhibits hereto.
15. The Parties acknowledge that they have had full opportunity to review, confer, and discuss this Agreement with legal counsel and that their respective legal counsel has advised that this Agreement is valid, enforceable, and legal in all respects and that the undersigned individuals have full authority to execute this Agreement on behalf of the respective Parties.
16. **No Admission.** Nothing contained in this Agreement shall constitute an admission of error, wrongdoing, liability, or any other kind, by any of the parties to this Agreement or by any persons or entities released or covered by this Agreement; provided, however, it is expressly understood
- //  
//  
//

Initials  




and agreed that this paragraph shall in no way bar any party from filing a claim, demand, or lawsuit for specific performance of the terms and conditions of this Agreement or for damages arising out of breach of the terms and conditions of this Agreement.

DATED this \_\_\_\_ day of \_\_\_\_\_, 2000.

For Granville Southern Corporation:

  
Ken Johnson, Its

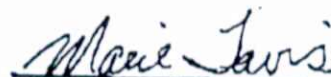
Dated: \_\_\_\_\_

  
Darrell S. Mitsunaga, WSBA 12992  
Reed McClure, Attorneys for Appellants  
Granville Southern Corporation, and  
Donald and Marie Tavis

For Donald and Marie Tavis:

  
Donald Tavis

Dated: 3/28/03

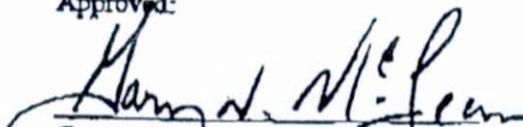
  
Marie Tavis

Dated: 3/28/03

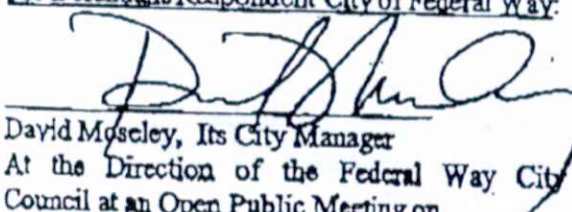
For Defendant/Respondent City of Des Moines:

  
Robert L. Olander, Its City Manager  
At the Direction of the Des Moines City Council  
at an Open Public Meeting on May 11, 2000,  
Dated: August 18, 2000.

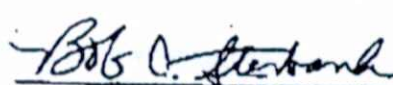
Approved:

  
Gary N. McLean  
Des Moines City Attorney  
21630 11<sup>th</sup> Avenue South, Suite C  
Des Moines, WA 98198

For Defendant/Respondent City of Federal Way:

  
David Muscley, Its City Manager  
At the Direction of the Federal Way City  
Council at an Open Public Meeting on  
July 18, 2000  
Dated: Aug. 25, 2000

Approved:

  
Bob C. Sterbank, WSBA No. 19514  
Federal Way Interim City Attorney  
33530 First Way South  
Federal Way, WA 98003-5006

Initials:  


RECEIVED  
DEC 20 1964

SETTLEMENT AGREEMENT, WAIVER, AND RELEASE

Granville Southern Corporation, Donald and Marie  
Tavis, and the Cities of Des Moines, and Federal Way

PARCEL A:

THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF THE  
SOUTHEAST QUARTER OF SECTION 32, TOWNSHIP 22 NORTH, RANGE 4 EAST,  
W.M., IN KING COUNTY, WASHINGTON;

PARCEL B:

THAT PORTION OF THE NORTH 219.70 FEET OF THE NORTHWEST QUARTER  
OF THE SOUTHWEST QUARTER OF SECTION 33, TOWNSHIP 22 NORTH, RANGE  
4 EAST, W.M., IN KING COUNTY, WASHINGTON, LYING WEST OF STATE  
HIGHWAY.

PARCEL C:

THAT PORTION OF THE SOUTH 219.70 FEET OF THE NORTH 439.40 FEET OF  
THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 33,  
TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY, WASHINGTON,  
LYING WESTERLY OF STATE ROAD NO. 1 (PACIFIC HIGHWAY SOUTH).

PARCEL D:

THE SOUTH 219.74 FEET OF THE NORTH HALF OF THE NORTHWEST QUARTER  
OF THE SOUTHWEST QUARTER LYING WEST OF THE STATE ROAD, SECTION  
33, TOWNSHIP 22 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY,  
WASHINGTON.

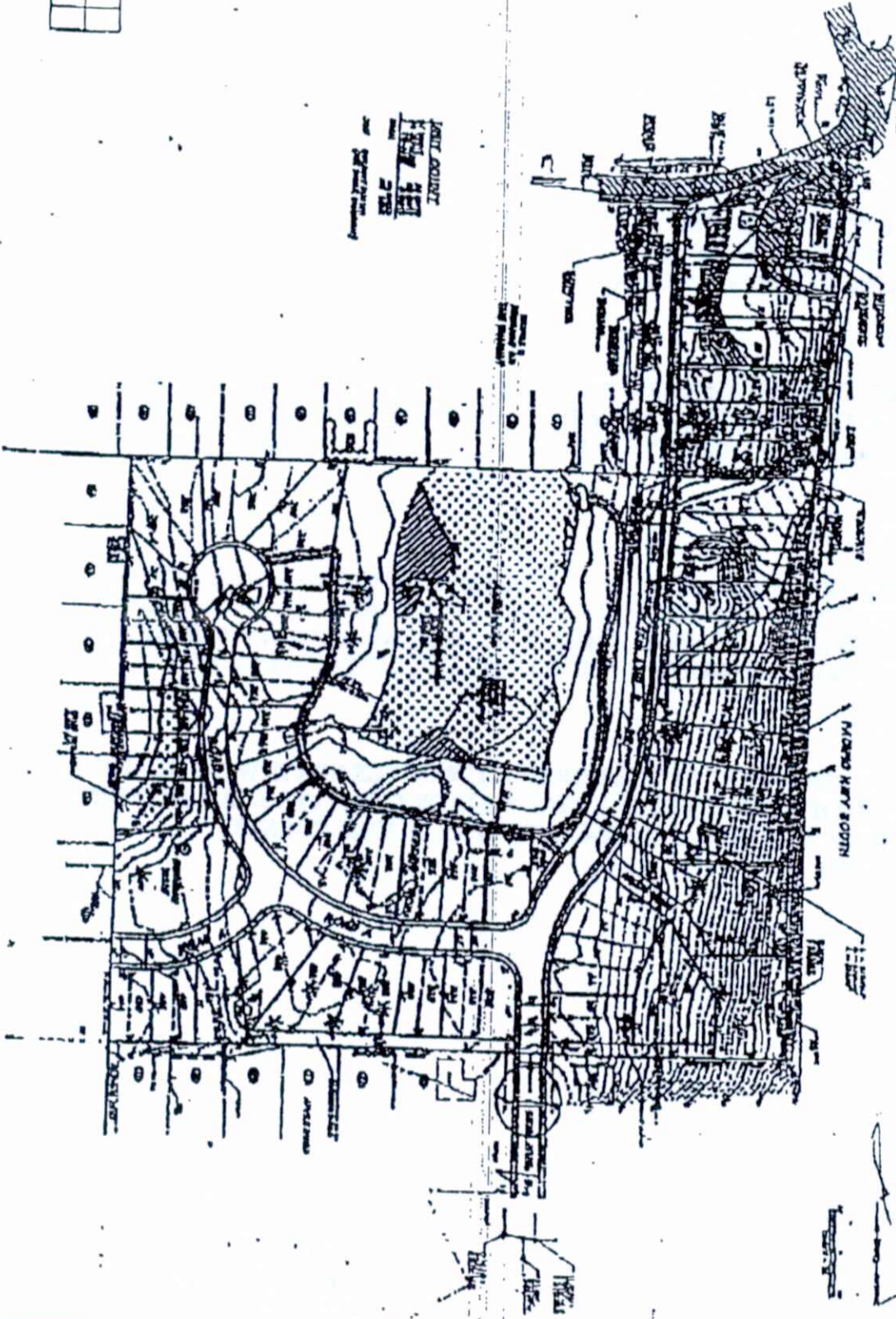
*Handwritten signature: GNM/BGR/D.J.M.T.*



Initials:  

|  |  |
|--|--|
|  |  |
|  |  |

DATE: 11/11/78  
 BY: [Signature]  
 FOR: [Signature]



SPR. 12, 1978, 22 1/2, 1000, 4 1/2, 1000

M.T.  
 D.T.  
 [Signature]  
 H.M.

ILLUSTRATIVE SITE PLAN

|        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. 1/4 | 2. 1/4 | 3. 1/4 | 4. 1/4 | 5. 1/4 | 6. 1/4 | 7. 1/4 | 8. 1/4 | 9. 1/4 | 10. 1/4 | 11. 1/4 | 12. 1/4 | 13. 1/4 | 14. 1/4 | 15. 1/4 | 16. 1/4 | 17. 1/4 | 18. 1/4 | 19. 1/4 | 20. 1/4 | 21. 1/4 | 22. 1/4 | 23. 1/4 | 24. 1/4 | 25. 1/4 | 26. 1/4 | 27. 1/4 | 28. 1/4 | 29. 1/4 | 30. 1/4 | 31. 1/4 | 32. 1/4 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|



Exhibit C

ZONING AND BUILDING DEVELOPMENT AGREEMENT FOR DEVELOPMENT OF  
THE GRANVILLE PROPERTY LEGALLY DESCRIBED IN ATTACHED EXHIBIT 1

- (1) Zoning shall be RA 3600;
- (2) Development shall be processed and approved as a Planned Unit Development or Subdivision pursuant to Des Moines Code consistent with the terms and conditions set forth herein and the Settlement Agreement, Waiver, and Release to which this document is appended as Exhibit C.
- (3) Except as otherwise stated herein, the number of units/lots shall not exceed 84 consisting of a mix of 21 single-family residences, 30 duplexes, and 1 triplex. The mix of single-family residences, duplexes and triplexes shall be subject to minor modification at the request of the Applicant, subject to the approval of Des Moines and Federal Way, as provided in paragraph (17) below. Ownership of each unit/lot shall be in fee simple ownership.
- (4) The number, location, type, configuration, and size of units and lots; size, location and configuration of detention; roadway location, width, and length; buffers; general layout; open space; and all other improvements shall be as depicted in the Illustrative Site Plan, dated March 17, 2000, prepared by Peterson Consulting Engineers under Job Number COPD-0001 and attached as Exhibit B ("Illustrative Site Plan") to the Settlement Agreement, Waiver, and Release to which this document is attached as Exhibit C. Minor deviations from said Illustrated Site Plan may occur subject to the approval of Des Moines and Federal Way, provided that the number of lots, units, and building sites shall remain unchanged, except that the number of lots, units, and building sites may be reduced, at the sole discretion of the applicant. The detention, drainage, and road layout reflected in the Illustrative Site Plan may also be changed, subject to approval by the City of Des Moines and the City of Federal Way. In case of conflicts between the Illustrative Site Plan and Des Moines' or Federal Way's zoning, codes, regulations, and land use controls, this Zoning and Development Agreement and the Illustrative Site Plan shall control.
- (5) The City of Des Moines shall provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on the Illustrative Site Plan prior to the City of Des Moines' approval of the Pacific Place Planned Unit Development. Prior to approval, the City of Des Moines shall also provide the City of Federal Way a minimum of fourteen (14) days within which to review and comment on any applications for building permits for individual buildings/lots within that portion of the Granville Property contained within the City of Federal Way PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time of any application for a building permit on any lot located on the east side of 15<sup>th</sup> Avenue South. To implement this paragraph, the City of Des Moines shall provide copies of the Illustrative Site Plan, or building permit application, as applicable.

*D.M.*  
*[Signature]*



to the City of Federal Way, and the 14-day review and comment period shall commence upon Federal Way's receipt of the Plan or application, as applicable.

- (6) The City of Des Moines shall provide to the City of Federal Way 15% of the application fee amount charged to the applicant for any building permit for lots on the Granville Property and located east of 15<sup>th</sup> Avenue South. Payment to Federal Way shall be made within 30 days of Des Moines' receipt of the fee from the applicant.
- (7) 15<sup>th</sup> Ave. S. as depicted in said Illustrative Site Plan shall be dedicated to the City of Des Moines as a public street;
- (8) Development applications that are consistent with the terms of this development agreement shall be deemed to have incorporated design considerations and mitigation measures that are sufficient to avoid probable, significant environmental impacts; accordingly, such application shall be subject to issuance of an MDNS, with no additional conditions other than as set forth herein, and no EIS will be required;
- (9) Previous studies related to wetlands and drainage on the site prepared and submitted to King County under King County Permit Application 807C0270 shall be deemed fully adequate and sufficient and shall be used. No additional studies shall be required. The Parties agree that the documentation provided to the Parties as part of said King County Permit Application 807C0270 is as follows:  
  
Environmental Site Assessment by Earth Consultants, Inc. dated September 23, 1997  
Road Variance by DBM Consulting Engineers dated February 19, 1998  
Subdivision Guarantee by First American Title Insurance Company order no. 345322-5  
Wildlife Study by Wetland Rescues, Inc. dated March 25, 1998  
Level One Drainage Report by Eastside Consultants, Inc. dated August 25, 1997  
Geotechnical Report by J. Keith Cross, P.E., dated May 31, 1997  
Traffic Report by David Hamlin & Associates and subsequent addendums  
Level Two Downstream Analysis by DBM Consulting Engineers dated June 8, 1998  
Technical Information Report By DBM Consulting Engineers dated October 24, 1997  
Wetland Report by Wetland Resources, Inc. dated July 29, 1997.
- (10) The Level 2 Flow Control Standard, as defined in the 1998 King County Surface Water Design Manual, shall apply to detention facilities for the project. No downstream analysis shall be required. The detention facilities for the project shall only need to meet additional drainage demands created by this project. This project shall not be responsible for solving preexisting drainage issues faced by downhill property owners;
- (11) School impact fees (for Federal Way School District) will be collected;
- (12) WSDOT must approve (in writing) any and all entrances and exits proposed to/from Highway 99; provided, however, that Applicant agrees not to seek approval for such entrances and/or exits to or from Highway 99 from the Granville Property;

D.J. M.T.  
H.M.C.



- (13) The market store will be demolished if the property upon which it is located is included within the project;
- (14) The City of Des Moines shall apply, and the applicant and its successors, heirs and assigns shall comply with, the City of Federal Way sign code, Federal Way City Code Sections 22-1596 - 22-1629, or as amended, with respect to that portion of the Granville Property within the City of Federal Way's PAA, as defined by the PAA Interlocal Agreement between the City of Des Moines and the City of Federal Way in effect at the time Granville or its successors, heirs or assigns seek to construct or install any sign.
- (15) The City of Des Moines shall apply, and the applicant shall comply with, the City of Federal Way street development requirements for that portion of Pacific Highway South abutting the Granville Property; provided, however, that the applicant shall not be required to construct street improvements for that portion Pacific Highway South. To mitigate the traffic impacts from the Pacific Place development, however, Granville shall do the following:
- (a) Pay its pro rata share of the cost of the future Transportation Improvement Project ("TIP") known as SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development or Subdivision approval from the City of Des Moines and the expiration of all applicable appeal periods. Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of twenty (20) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the SR 99 from S. 284<sup>th</sup> to S. 272<sup>nd</sup>.
  - (b) Pay its pro rata share of the cost of the TIP known as S. 288<sup>th</sup> / SR 99 Intersection Improvements, which pro rata share is hereby determined to be \$21,000. Said payment shall be made to the City of Federal Way at the time Granville receives final Planned Unit Development approval from the City of Des Moines and the expiration of all applicable appeal periods. [Note: I added this to clarify timing of payment.] Pursuant to Federal Way City Code Section 19-46(b)(5), for a period of seven (7) years from the date of this Agreement, Granville hereby waives for itself and its successors and assigns the right to any refund of its pro rata share of the S. 288<sup>th</sup> / SR 99 Intersection Improvements. *payment*  
*Bill*
  - (c) As part of the Pacific Place planned unit development, dedicate to the City of Federal Way a 15-foot right-of-way along the east boundary of the Granville Property lying immediately adjacent to and fronting along Pacific Highway South. Provided, that such right-of-way dedication may, at the sole discretion of Granville, contain a reversionary clause, causing the dedicated property, or any portion thereof, to revert back, be re-conveyed, or otherwise transferred to Granville, its heirs, successors, and assigns in the event that the City of Federal Way determines, in its sole discretion, that the dedicated property, or any portion

*D. L. M.*

*U. N. 1-25-2*



thereof, is not needed for right-of-way purposes at the time of construction of the SR 99 S. 284<sup>th</sup> - S. 272<sup>nd</sup> TIP.

- (16) In recognition of recreation space dedication requirements customarily imposed by the City of Des Moines, the City of Des Moines expressly agrees that Granville shall be given full credit for the total square footage of the 10-foot wide easement granted for construction of the walkway surrounding the wetland located in the middle of said project and the costs of construction for the sidewalk along said walkway.
- (17) In deference to the recreation space improvement requirements customarily imposed by the City of Des Moines, Granville shall make a one-time payment in the amount of \$47,500.00 to the City of Des Moines. As consideration for Granville's agreement to make the full payment of \$47,500.00, the City of Des Moines agrees to increase the maximum number of units allowed by one, to 85, which the Applicant, in its sole discretion, can apply to create a single-family residence, duplex, or triplex; provided, however, if Granville is unable or chooses not to increase the maximum number of lots in the final plan to 85, it shall only be responsible for making a one-time payment in the amount of \$35,000.00 to the City of Des Moines as its mitigation fee for recreation space improvements. Arrangements for said payment, if applicable, and written confirmation in the form of an amended site plan reflecting Granville's decision regarding the final number of units and their final placement and configuration, shall be made on or before the date on which the Des Moines City Council is scheduled to vote on Granville's proposed Planned Unit Development as described herein. Said payment, however, shall not be due until final approval of the Planned Unit Development or Subdivision as described herein and the expiration of all appeal periods.
- (18) At the time of construction of 15<sup>th</sup> Avenue South, Granville shall install traffic calming devices, in the form of speed humps, on 15<sup>th</sup> Avenue South within the proposed Pacific Place site and within the Applewood subdivision. The number, location and design of the speed humps shall be as determined by the City of Des Moines and City of Federal Way Public Works Directors, and set forth by Granville on the engineering / construction plans for 15<sup>th</sup> Avenue South.
- (19) No mitigation fees or improvements shall be required as a condition of approval of the Planned Unit Development by the City of Des Moines, except as set forth herein; provided, however, that this agreement does not alter or waive Granville's legal obligation to comply with any and all applicable laws regarding impact fees imposed by the Federal Way School District.

D. J. M. T.  
11.11.12

GRAPHIC SCALE

1" = 50'

[illegible]

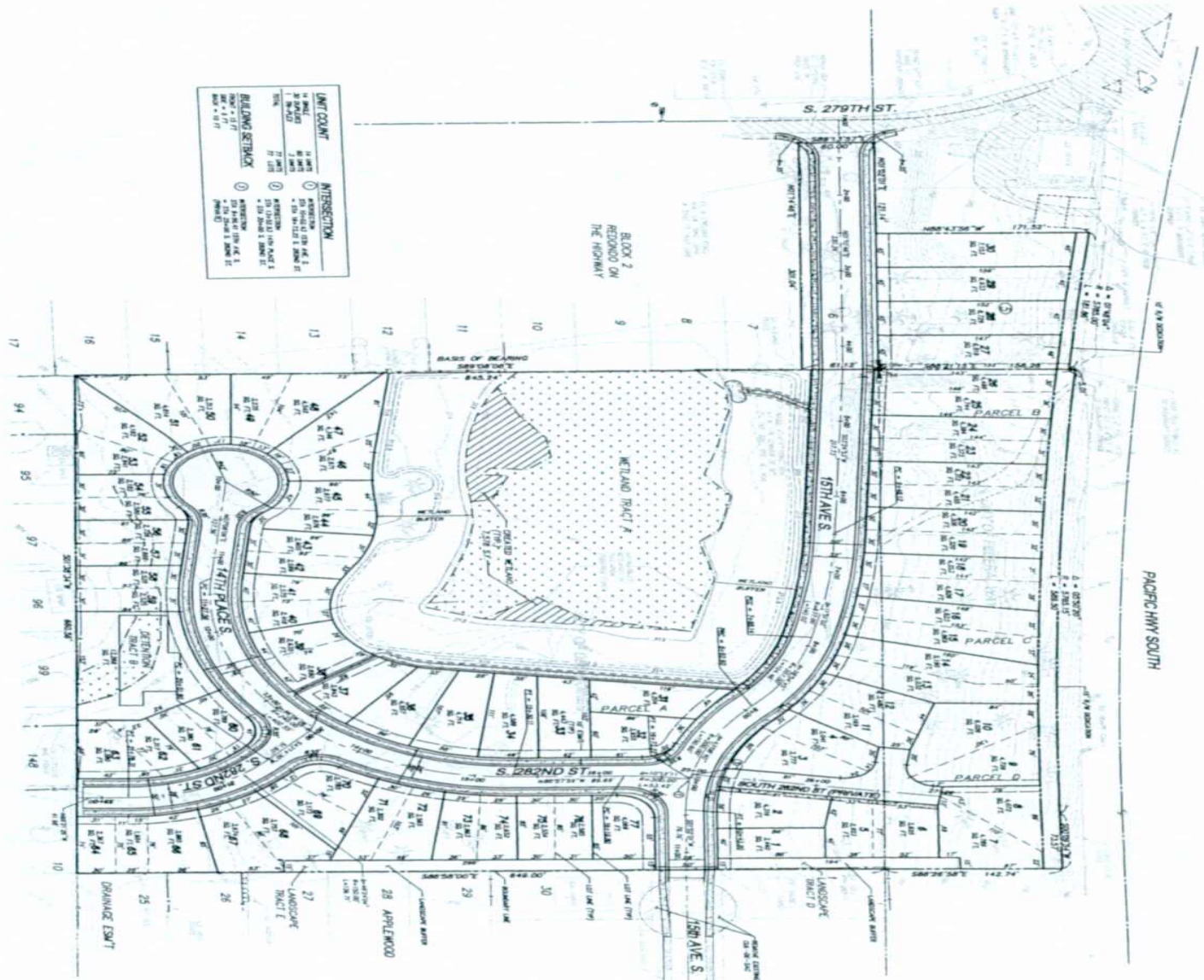
WASHINGTON

**PACIFIC HEIGHTS**

DES MOINES.

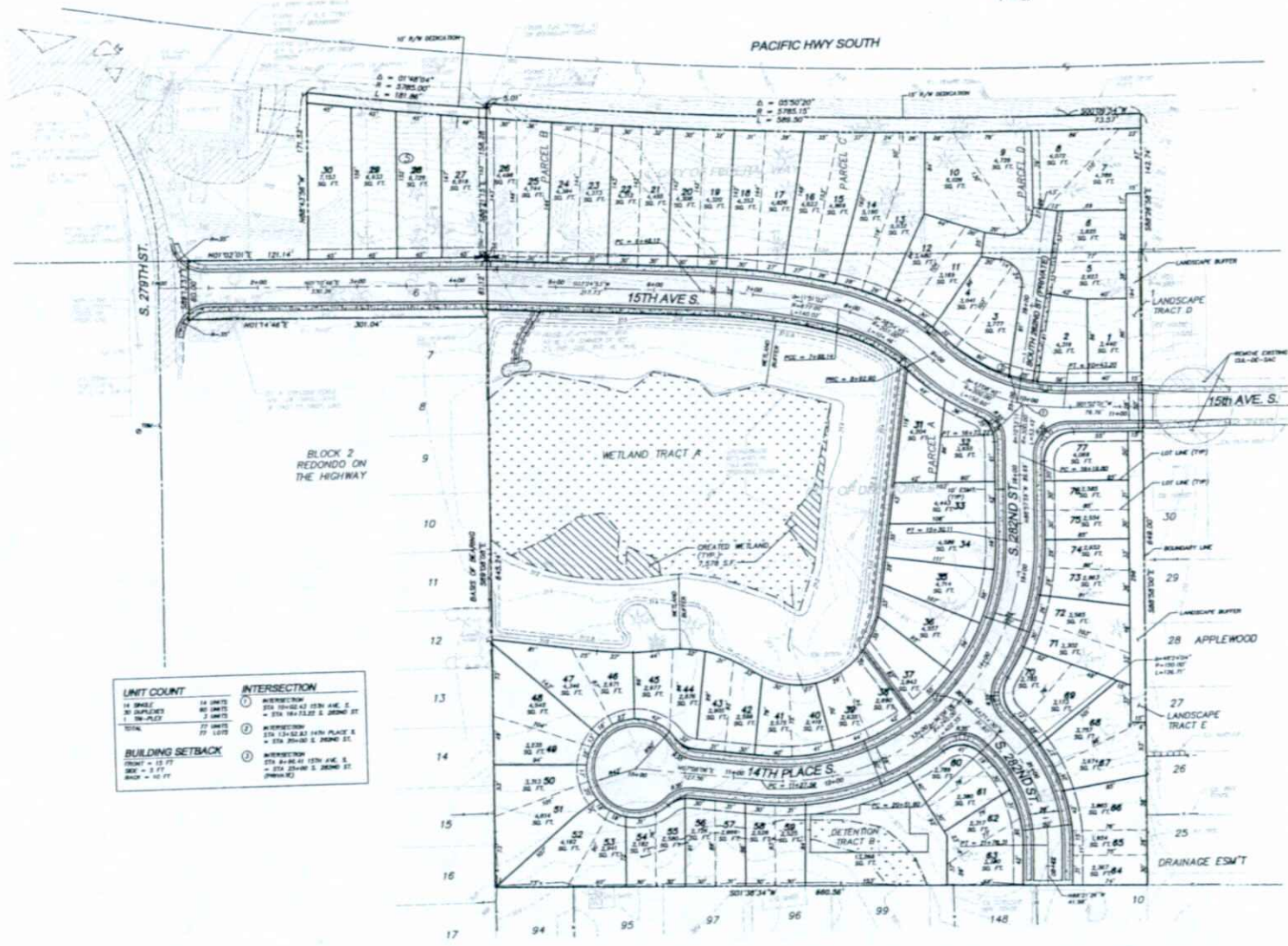
4010 Lake Washington  
Bnd. N.E., Suite 300  
Kirkland, WA 98033  
Tel (425) 827-5874  
Fax (425) 822-7216

25 NUMBER  
 PACW-0001  
 25 9

[illegible]



SEC. 32, TWP. 22 N, RGE. 4 E, W.M.



| UNIT COUNT       |           |
|------------------|-----------|
| 14 UNITS         | 14 UNITS  |
| 30 UNITS         | 30 UNITS  |
| 1 UN-PLAT        | 1 UN-PLAT |
| TOTAL            | 77 UNITS  |
|                  | 77 UNITS  |
| BUILDING SETBACK |           |
| FRONT = 10 FT    |           |
| SIDE = 5 FT      |           |
| REAR = 10 FT     |           |

| INTERSECTION |                                                                            |
|--------------|----------------------------------------------------------------------------|
| 1            | INTERSECTION<br>S15 10+00.00 15TH AVE. S.<br>+ S14 10+00.00 15TH AVE. S.   |
| 2            | INTERSECTION<br>S15 12+00.00 14TH PLACE S.<br>+ S14 12+00.00 14TH PLACE S. |
| 3            | INTERSECTION<br>S15 14+00.00 13TH AVE. S.<br>+ S14 14+00.00 13TH AVE. S.   |

PACIFIC HEIGHTS

PRELIMINARY PUD MAP

PETERSON CONSULTING ENGINEERS

4010 Lake Washington Blvd. N.E., Suite 300 Kirkland, WA 98033 Tel (425) 827-5874 Fax (425) 822-7216

PROJECT NUMBER PACW-0001 SHEET NUMBER 2 of 9