



---

# GARNESS ENGINEERING GROUP, Ltd.

---

CONSULTANTS & GENERAL CONTRACTORS

---

October 20, 2004

Dave Belanger  
Archdiocese of Anchorage  
225 Cordova Street  
Anchorage, AK 99501  
Phone: (907) 297-7733  
Fax: (907) 279-3042

**Subject:** St. Anthony Apartments Flooding Study

Garness Engineering Group, Ltd. (GEG) was originally hired by Northern Adjusters, Inc. (NCI) in September of 2004 to investigate and determine the source of water infiltrating into the basement of the St. Anthony's apartments at 924 South Klevin. The question was whether the water originated from a leak on the Anchorage Water & Wastewater Utility (AWWU) water system, or from a rise in the surrounding groundwater table. The findings appeared to point to elevated water table levels and not to a leak on the AWWU distribution system. An engineering letter was written stating that the only way to confirm elevated groundwater was to bore test holes at strategic points around the foundation, install monitoring tubes and verify water levels.

GEG was then retained by the Archdiocese of Anchorage to proceed and confirm groundwater levels. Dave Belanger, Facilities Manager for the Archdiocese, selected four appropriate test hole sites and coordinated locates. Discovery Drilling was hired to bore the holes and install 2" PVC to a depth of approximately 12 feet. The monitoring tubes were allowed to sit over the weekend and then GEG's Caleb Gall went to the site on Monday, October 11, 2004 to measure elevations. All measurements used the top of the garage floor slab as a set elevation of 100.00 feet. Mr. Belanger requested additional measurements be taken during our site visit. Water levels in the monitoring tubes were re-checked on Friday, October 15, 2004.

|  |        |
|--|--------|
| Top of garage slab                         | 100.00 |
| Basement apartment floor                   | 95.51  |
| Elevation of water in stairwell            | 95.61  |
| Top of on-property private manhole         | 100.20 |
| Bottom of on-property private manhole      | 94.20  |
| Water level in on-property private manhole | 94.82  |
| Highest point in front yard                | 102.50 |
| Klevin & San Roberto pavement surface      | 98.90  |

Please see the attached diagram for test hole locations and the monitoring data. Every test hole revealed similar water levels at or above the elevation of the infiltration problem. Elevated groundwater levels are now verified as the culprit. Water levels did not vary significantly, therefore, an outside source apart from the existing water table is not suspected.

Mr. Belanger called recently to report that a neighboring property also had flooding problems.

Regrettably, groundwater problems often pose great difficulty in finding reliable, cost-effective solutions. Some possible options include sealing the foundation, installing a foundation drain system, or abandoning the basement and converting it into a crawlspace. Each of these options has serious and costly drawbacks.

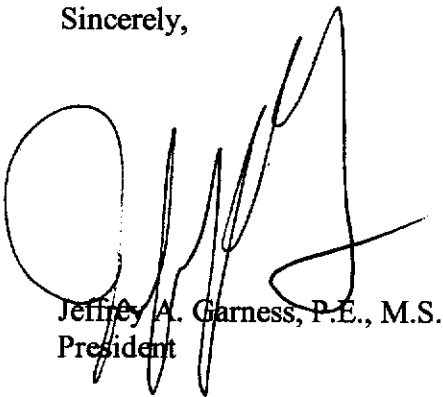
Sealing around the foundation will not prevent water from entering the structure up through cracks or penetrations in the concrete slab. No storm drains exist within 500 feet of the property, so installing a passive drain system is not a viable option. Sump water is not allowed to be continuously discharged onto city streets. It is illegal to discharge sump water into the sanitary sewer system. Due to these restraints, a passive drainage system can not be constructed at this time, leaving an active (mechanical) system as the next viable option.

An active drainage system involves excavating around the foundation and installing a French drain complete with a collection pit, sump pump, and a large holding tank. The holding tank will require frequent pumping, creating ongoing maintenance expenses.

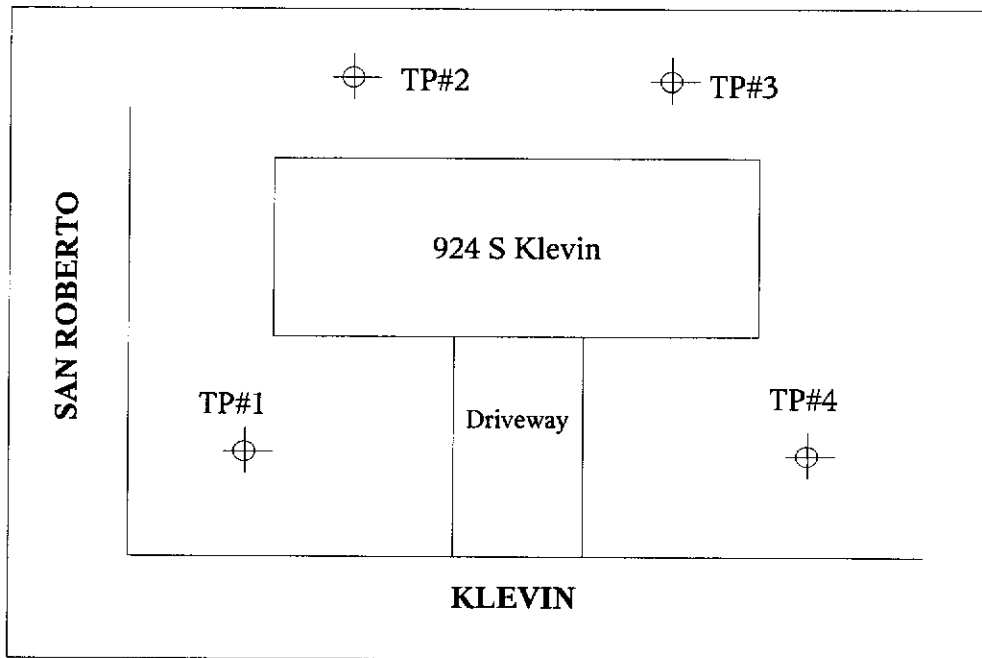
Abandoning the basement and converting it into a crawlspace will involve considerable labor and expense. However, this option appears to be preferable to installing a mechanical system to remove collected groundwater.

Thank you for this opportunity to assist you in determining the source of flooding at the St. Anthony's apartment. Please call me at 337-6179 if you have any questions or require further assistance once you decide which option best serves your needs.

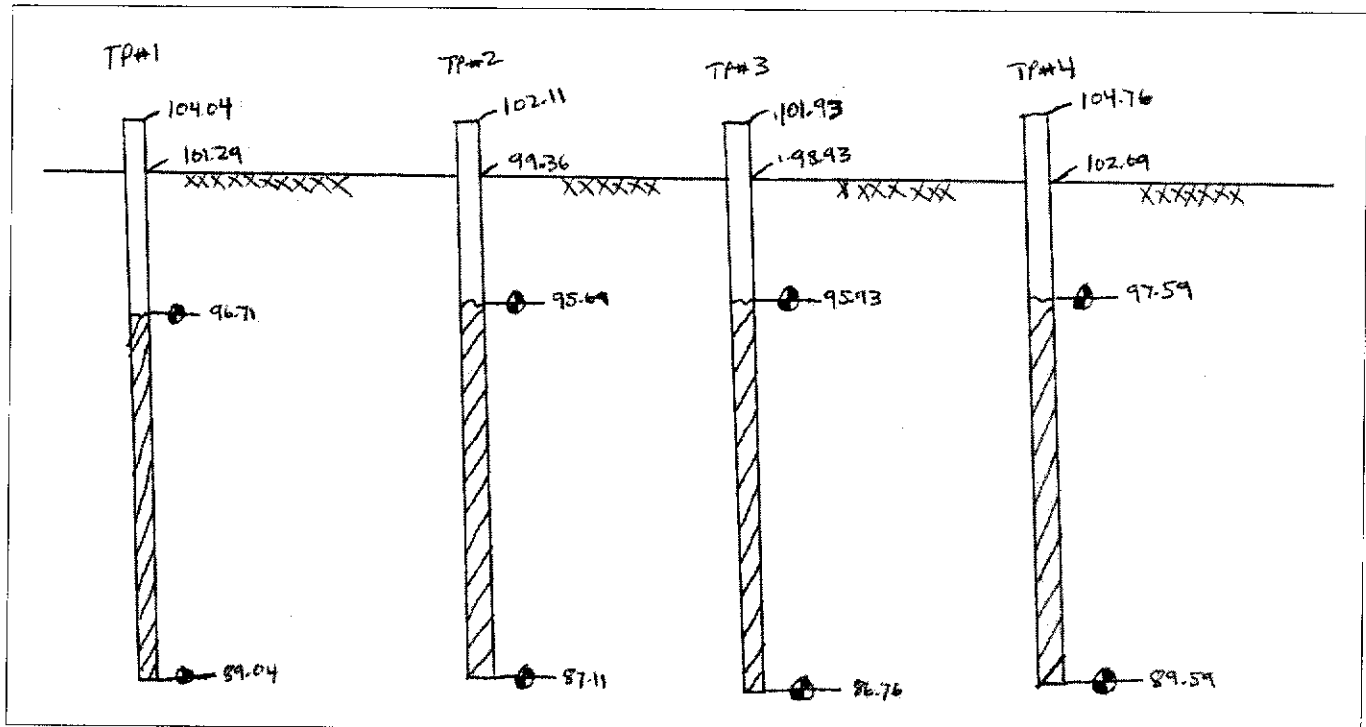
Sincerely,

A handwritten signature in black ink, appearing to read 'Jeffrey A. Garness', is written over the typed name and title.

Jeffrey A. Garness, P.E., M.S.  
President



Location of monitoring tubes on property



Monitoring Tube Elevation Data from October 11, 2004  
(Top of garage slab = 100.00)

**Water Levels Verified 10-15-04**

- TP#1 96.71
- TP#2 95.69
- TP#3 95.85
- TP#4 97.34